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SCALING MOUNT EXAFLOPS

The Top500 list is always climbing to new heights. Can we believe the hype? **PAGE 24**

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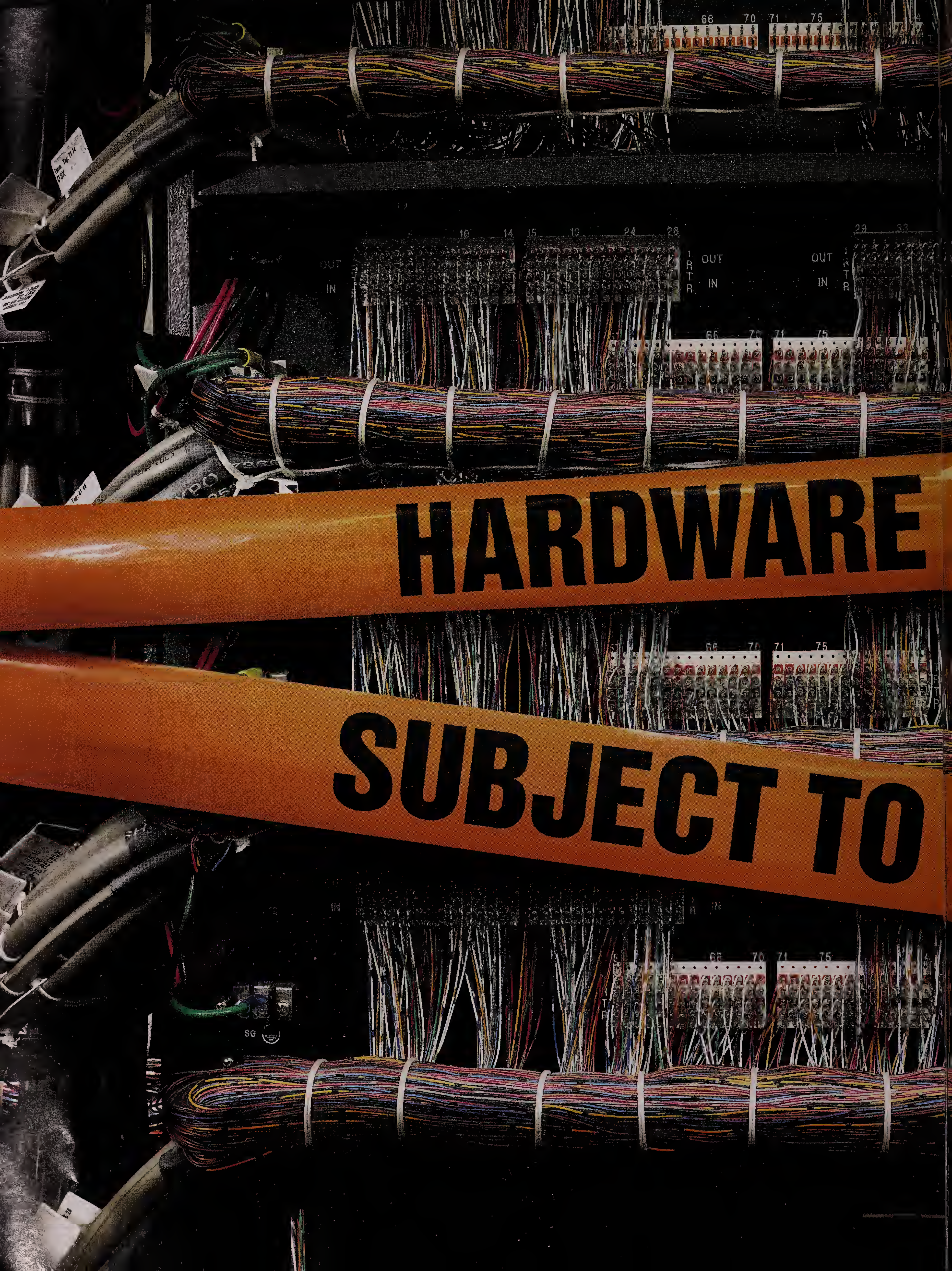
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COVER ILLUSTRATION BY TIM BOWER

ALTERNATIVE THINKING ABOUT SERVICE MANAGEMENT:

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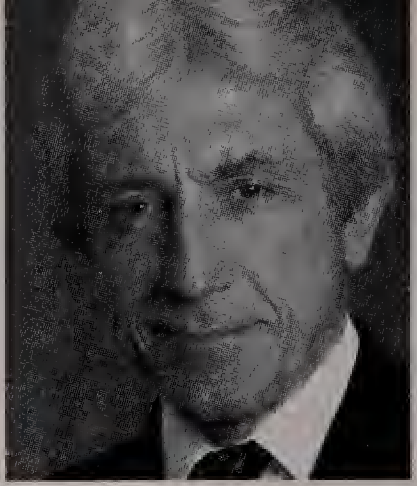
EDITOR'S NOTE

Don Tennant



Context of Collapse

NOT ALL of the 204 laureates from 26 nations who were honored at the *Computerworld* Honors Program in Washington in June were able to attend the event. One of those unable to make it was Sara O'Neill, senior vice president of global storage management at a company that was in the news last week. That company is Lehman Brothers.

It was a shame that O'Neill wasn't there. It's a spectacular event that honors contributions to the field of information technology and to those the field serves. O'Neill deserved to be there to be recognized for what she and her team had accomplished in the build-out of a new data center in less than nine months in Cranford, N.J., not far from Lehman's offices in Jersey City, where O'Neill is based. It was a model project that other companies are studying for a number of reasons, not the least of which is that it incorporated technology that significantly decreased power consumption and cooling requirements.

O'Neill wasn't at the event in Washington because Lehman's management had banned what it considered to be nonessential travel. The short train trip from Jersey City to Washington to let O'Neill receive the honor on behalf of a team that had worked tirelessly on the project was not approved.

That just seemed wrong. So we brought the event to O'Neill.

On Aug. 14, I had the honor of traveling to Jersey City to present O'Neill with her *Computerworld* Honors medallion and to thank her and her team in person for their contribution. In the lobby of the building, with the Lehman Brothers logo as a backdrop and her team gathered around her, I presented O'Neill with the medallion. As I draped it around her neck, I spoke the words that are recited to every laureate who receives the award:

"On behalf of the Honors Foundation, the Archives and Academic Council, the Chairmen's Committee, and future generations for whom we hold these materials in trust, it is my honor to present this medallion in recognition of the quality of your work, and to thank you for your contribution to the history of information technology."

It was a happy day for all of us. Little did we know that just one month later, Lehman would collapse into bankruptcy.

O'Neill just beamed. It was a happy day for all of us. Little did we know that just one month later, on Sept. 15, Lehman would collapse into bankruptcy.

I e-mailed O'Neill the day after the bankruptcy announcement to see how she was doing. Despite being in what had to be a tumultuous environment, she wrote back less than two hours later. Her response was brief, but it said a lot.

"It's not clear yet what's going to happen," she wrote. "Hope it's all for the best."

It struck me that O'Neill seemed remarkably responsive and upbeat, considering the circumstances, and I wondered how she managed to keep her poise. And then I remembered.

The Lehman Brothers building in Jersey City is just across the Hudson River from Lower Manhattan. As I stood in front of it that afternoon in August, I gazed across the river to where the Twin Towers of the World Trade Center used to be. I would find out later that day that Lehman had had offices on the 38th, 39th and 40th floors of the North Tower. The Lehman employees in Jersey City watched in horror, as the rest of the country did, when the buildings collapsed.

Thankfully, almost all of their colleagues were able to escape in time and survived. But neither they, nor employees like O'Neill, had the luxury of retreating into any sort of mournful limbo. O'Neill was head of Lehman's desktop operations at the time, and she had the displaced employees back online within a couple of days.

I'm not sure what the moral of the story is, or even if there is one. I do know that Lehman's collapse last Monday, seven years almost to the day after the collapse of those towers, needs to be viewed in some larger context. And I know that O'Neill and her colleagues will be fine. They've been through a lot worse than what happened last week. ■

Don Tennant *is editorial director of* Computerworld *and* InfoWorld. *Contact him at don_tennant@computerworld.com, and visit his blog at* http://blogs.computerworld.com/tennant.

The Effect of Telework

I was an IT manager for over 15 years and agree that teleworking can have adverse effects on performance ["Telework Up, Productivity Down?" Aug. 20]. Now, as a professor, I have conducted a study on these effects. I looked at 18 teams in nine organizations whose members were in different locations — across the street or across the world. I found that not being collocated with team members had a negative impact on team social networks, both face-to-face and electronic. But working away from others had a positive impact on performance. And being in the center of the electronic social network had a positive impact on performance, while being in the center of the face-to-face social network had no impact.

So, what does this tell us? First, as many remote workers know, sharing knowledge and communicating electronically is more difficult than doing so face-to-face. More has to be explained, and it can be harder to get someone's attention. But there are rewards for those central in the team's electronic network of communication. They receive more information and can often get others to assist them. There is also a key difference between telework and distributed teamwork. Distributed team members accept that face-to-face contact will be minimal and take steps to facilitate electronic communication. In telework situations, people assume that a teleworker will eventually be in the office and wait for face-to-face contact, delaying completion of work.

Second, the study highlights the benefits of working away from team members. Fewer distractions and more time to work on tasks can improve an employee's performance. But processes and routines are needed that ensure collaboration. This does not require high-speed, sophisticated electronics that try to mimic face-to-face networks. The teams in my study primarily used telephone and e-mail. But the successful members in those teams understood how to use a basic electronic network to meet their goals, and the organization supported them with appropriate processes.

■ **Priscilla Arling,** *assistant professor of MIS, College of Business Administration, Butler University, Indianapolis, parling@butler.edu*

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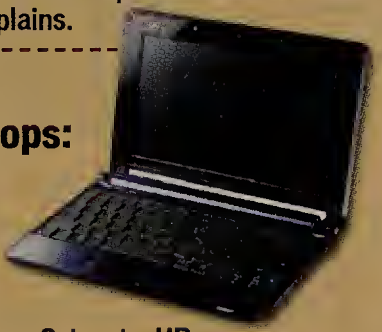
With Windows 7, Is Microsoft Echoing Its Longhorn Mistakes?

OPINION: Based on a sneak preview of Windows 7 that Microsoft offered at a tech conference, it looks like the forthcoming operating system is heading down the same road that led to Vista. Jupitermedia's Michael Gartenberg explains.



Four New Mini-Laptops: Which Is Smallest, Lightest, Best?

New models from Sylvania, HP, Acer and Asus all offer portability, low prices and Linux. See how they compare.

Laptop Bags That Will Speed You Through Security

If you carry one of these TSA-approved bags, you won't have to pull your laptop out for show and tell.

How to Deploy the iPhone 3G For Business, Part 2

Getting iPhones to connect and sync with Exchange servers can be tricky. Here's how to make it all work smoothly.

Chrome Secrets

There's a lot you can do to get the most out of the beta of Google's new browser. For starters, try giving Chrome a new theme or powering it up with bookmarklets.

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News Digest

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THE WEEK AHEAD

MONDAY: Sessions begin at Oracle's OpenWorld 2008 user conference in San Francisco.

WEDNESDAY: A pretrial hearing is scheduled in San Francisco Superior Court in the case of Terry Childs, a network administrator charged with locking up the city's WAN.

THURSDAY: CEO Steve Ballmer is scheduled to speak on Microsoft's challenges and the software industry's future at the Churchill Club's annual dinner in Santa Clara, Calif.

CAREERS

HP to Cut 24,600 Jobs In Wake of EDS Buy

HEWLETT-PACKARD Co. last week said it plans to shed 24,600 jobs as part of a restructuring following its acquisition of Electronic Data Systems Corp.

HP announced the layoffs on the same day the stock market nose-dived, a major investment bank failed and the financial services industry appeared set to cut jobs by the tens of thousands.

"That was a tough day on Wall Street," said HP chairman and CEO Mark Hurd in a conference call with financial analysts, in which he worked hard to assure them that HP will act quickly to integrate EDS.

"We will be a bigger, stronger company by the time we get EDS integrated," Hurd said.

The $13.9 billion deal to buy Plano, Texas-based EDS closed late last month.

The 7.5% workforce reduction will be spread over three years, with half of the layoffs coming from the U.S. HP did not say how the layoffs will be split between HP and EDS workers.

HP said it expects the restructuring to cut its annual costs by about $1.8 billion.

The company also noted that a $1.7 billion charge will be recorded in its fourth fiscal quarter, which ends Oct. 31.

Hurd told analysts that the company also hopes to take advantage of "other synergies" between the merged companies.

"Having the most efficient cost structure is directly related to your ability to scale and grow," said Hurd.

In an e-mail, John Madden, an analyst at London-based Ovum Ltd., said that integrating EDS in troubled economic times presents a "daunting but not insurmountable challenge" for HP. He also noted that the goal of the layoff "is the elimination of redundancy in corporate support and other functions and is not primarily due to the shifting of services resources."

Madden added that it "was clear from Monday's meeting [with analysts] that it will take six to nine months for the first real signs of progress from the integration to emerge."

When the merger was first announced in May, EDS said that it had approximately 137,000 employees, including about 47,000 in the U.S.

EDS had been shrinking its domestic workforce, moving more work overseas in part to stay competitive with larger Indian IT outsourcers.

— Patrick Thibodeau

GETTY IMAGES

[illegible]

Forever 21 Discloses Card Data Theft

Forever 21 Inc. disclosed last week that almost 99,000 payment cards used by customers at its retail stores may have been compromised in a series of data thefts dating back to August 2004.

In a statement on its Web site, the Los Angeles-based discount retailer said it learned of the possible data theft on Aug. 5, when it was notified by the Boston office of the U.S. Department of Justice.

The company did not say why it waited more than a month after discovering the compromise to notify affected customers. The DOJ had disclosed the Forever 21 breach in indictments filed against three people for hacking into the computer systems of multiple retailers.

Forever 21 said the compromised data included credit and debit card numbers, expiration dates "and other card data." It did not return a call seeking comment.

– JAIKUMAR VIJAYAN

■ The breach is linked to the arrest of 11 people in connection with data thefts at 12 retailers.

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HARDWARE

Samsung-SanDisk Deal Likely to Be Nixed by Regulators

IF SANDISK CORP. agreed to Samsung Electronics Co.'s $5.85 billion hostile takeover bid, the proposed deal would likely be rejected by government regulators fearful that it would create a near monopoly in the flash memory market, analysts say.

Milpitas, Calf.-based SanDisk rejected last week's unsolicited takeover bid by Seoul-based Samsung, contending that the offer undervalues the maker of flash storage cards. SanDisk did not rule out accepting a sweeter offer.

Analyst Jim Handy at Objective Analysis in Los Gatos, Calif., said a Samsung-SanDisk combination would "severely constrain" the negotiating position of major flash memory buyers such as Apple Inc.

Last year, Samsung and SanDisk together supplied nearly 50% of the world's NAND chips, whether measured in dollars or gigabytes, Handy added.

Cheng Ming-kai, an analyst at CLSA Asia-Pacific Markets in Hong Kong, agreed that a Samsung-SanDisk alliance would likely be rejected by the U.S. Department of Justice, based on measures it uses to determine market competitiveness.

> **"SanDisk Corp. continues to cling to unrealistic expectations on both its stand-alone market value and an appropriate merger price.**
>
> YOON-WOO LEE, VICE CHAIRMAN AND CEO, SAMSUNG ELECTRONICS, IN A LETTER TO SANDISK'S BOARD OF DIRECTORS

Samsung and SanDisk had been negotiating a deal for about four months before Samsung went public with its offer last Tuesday, apparently after the discussions had broken down.

In rejecting Samsung's proposal, Eli Harari, SanDisk's chairman and CEO, said that while his company is willing to discuss a takeover, the $26-per-share offer "is opportunistically timed at the trough of an industry-wide downturn" and undervalues the flash card maker.

In a statement, SanDisk also suggested that the offer may be a "calculated negotiating ploy" aimed at gaining the upper hand in an ongoing patent-licensing dispute between the two companies.

Samsung, already the world's largest producer of NAND flash memory chips, could also increase its production at the expense of SanDisk's current manufacturing partner, Toshiba Corp.

It's unclear what would happen to Toshiba if Samsung's bid for SanDisk succeeded, though Handy speculated that the Tokyo-based firm would be pushed aside while Samsung manufactured all the chips needed for the combined business.

— Dan Nystedt, Robert McMillan and Nancy Gohring, IDG News Service

Short Takes

Apple Inc. has released patches for at least 34 bugs, including one to fix a critical Internet security vulnerability in the **Mac OS X** operating system. At least nine of the patches fix flaws that could be exploited to run unauthorized software on a victim's computer.

Cisco Systems Inc. said it has agreed to buy **Jabber Inc.**, a provider of instant messaging software, in a move that could heighten the company's battle with Microsoft Corp. The terms of the deal were not disclosed.

Best Buy Co. has agreed to pay about $121 million in cash for online music pioneer **Napster Inc.** Best Buy, which had held a minority stake in Napster, will gain a database of about 700,000 subscribers to Napster's digital entertainment services.

IBM has opened the **Center for Social Software**, a think tank in Cambridge, Mass., that aims to pull various cultural perspectives into the development of social software.

DATA CENTERS

VMware Shows Off New Cloud Computing Initiative

LAS VEGAS – VMware Inc. last week took a big step in its effort to show IT managers that every business can follow Google's example and run a highly efficient and automated data center that operates like a living organism.

At its VMworld conference here, the company unveiled a new cloud computing initiative, called vCloud, along with its Virtual Datacenter Operating System for managing a computing cloud's underlying servers, storage and network systems.

VMware said vCloud will let IT managers tap into the resources of third-party providers of hosted systems in the same way they access applications on internal servers.

In his keynote address, VMware CEO Paul Maritz said, "We are going to see the traditional operating system deconstructed and made more customized and relevant to the particular application framework."

VMware's Maritz during his VMworld keynote.

The former Microsoft Corp. executive added that "by and large, people are no longer writing traditional Windows applications. [They] are increasingly looking at different ways of writing and provisioning applications." Maritz didn't say how this would affect Windows.

Joe DiMeo, a systems architect at New York University, said VMware's push into cloud computing isn't surprising, given Microsoft's recent virtualization moves. "I think it's the only way [VMware is] going survive," he said.

– PATRICK THIBODEAU

HARDWARE

Supercomputing Lands on The Desktop in Cray CX1

« The Cray CX1 supercomputer

CRAY INC. last week unveiled a $25,000 desktop supercomputer that it developed with Microsoft Corp. and Intel Corp.

The Cray CX1, which runs the Windows HPC Server 2008 operating system, uses up to eight nodes and 16 Intel Xeon processors — either dual-core or quad-core.

The CX1 has up to 4TB of internal storage and 64GB of memory per node, according to Cray. The system is priced from $25,000 to more than $60,000.

Rob Enderle, an analyst at Enderle Group, said the CX1 represents a shift from the traditional model of pushing supercomputers "upward and out."

"Here's someone pushing down onto the desktop," said Enderle, noting that the new machine will likely appeal to existing Cray customers, who "will buy these to free up space on their $25 million supercomputers."

Cray said the CX1 is its first supercomputer based on Intel processors, and the first result of a joint effort launched by the two companies in April.

At that time, Cray and Intel said they planned to develop a range of multicore technologies and high-performance computers over the next several years.

Cray said it expects that the low-end supercomputer will appeal to midsize companies and corporate departments that have been unable to buy supercomputers because of the cost and a lack of in-house expertise.

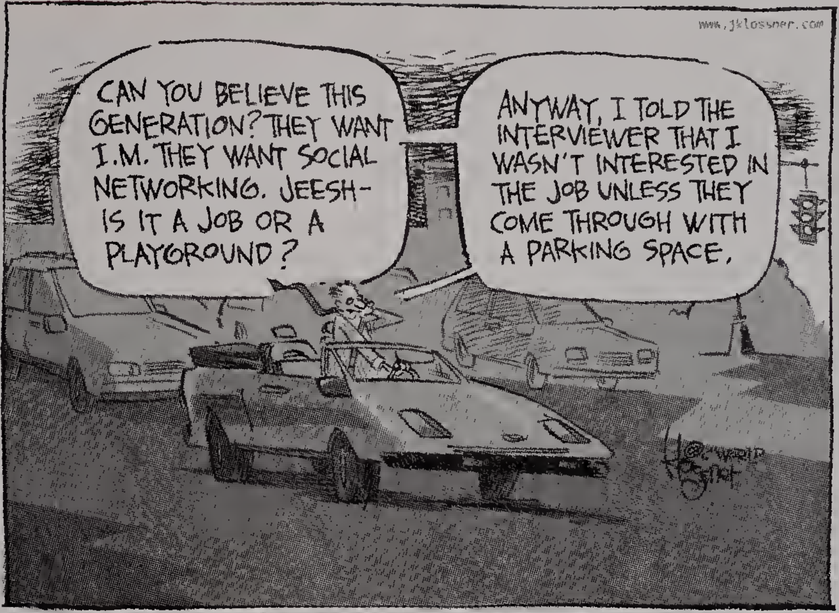
Cray did not release performance specs on the CX1.

The world's most powerful supercomputer, IBM's Roadrunner, weighs 500,000 pounds and takes up 6,000 square feet. It runs at up to 1.026 petaflops and costs about $120 million. (See related story, page 24.)

— *Sharon Gaudin*

BETWEEN THE LINES

By John Klossner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BENCHMARKS LAST WEEK

A federal grand jury in Florida indicted eight people and eight companies from Dubai, Iran and Malaysia on charges of exporting sensitive electronics equipment from the U.S. to Iran.

Nvidia Corp. plans to lay off 360 workers, or 6.5% of its workforce, just a month after it took a one-time charge of $196 million to cover the cost of replacing bad chips used in Dell and Hewlett-Packard laptops.

ONE YEAR AGO: The Mozilla Foundation created a subsidiary to focus on development of its Thunderbird open-source e-mail client.

Global Dispatches

U.K. NHS Staff Data Lost in Mail

LONDON – The U.K. National Health Service last week confirmed that four disks containing information on 17,990 employees were lost after they were mailed to the agency's payroll service provider.

The agency said that an employee violated NHS policy by mailing the disks from London-based Whittington Hospital to the offices of McKesson Corp. The worker, since suspended, should have used a courier.

The NHS would not say whether the data is encrypted, but it did report that it is password-protected and "difficult" to access. The agency has launched an internal investigation, contacted police and the U.K. Information Commissioner, and notified all staffers.

The disks contained the names, birth dates, national insurance numbers, and pay and attendance details of current and former employees.

Leo King,
Computerworld U.K.

EU Planning Two IT Security Projects

BRUSSELS – The European Commission's justice and security departments announced that they're planning to award two contracts for projects to improve Internet and telecommunications security.

The contracts will be awarded later this year. One is for a nine-month, €500,000 ($718,000 U.S.) project to define criteria for identifying critical IT infrastructure. The second contract, valued at €400,000 ($574,000 U.S.), is for finding ways to improve the emergency preparedness of telecommunications systems and the Internet in Europe.

Paul Meller,
IDG News Service

BRIEFLY NOTED

The Kenyan government last week announced the creation of a $39 million (U.S.) venture capital fund to support IT projects selected by the Ministry of Industrialization. The fund includes contributions from the government and private investors in Kenya, South Africa, the U.S. and the U.K.

Rebecca Wanjiku,
IDG News Service

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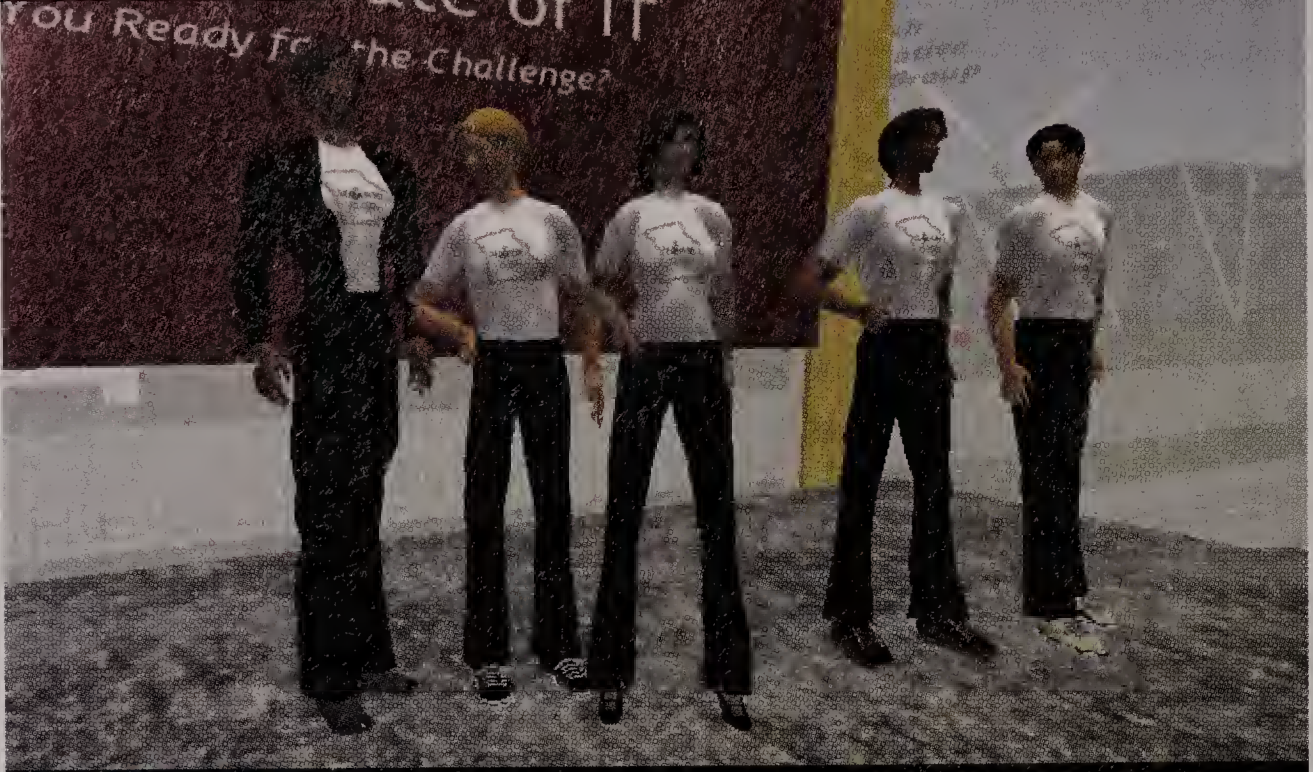


State of Missouri IT managers, in avatar form, oversee a state Second Life virtual job fair. The officials are, from left, Bill Bott, deputy CIO; Paul Wright, IT director of education; Jan Grecian, technical specialist; Dan Ross, CIO; and Gary Lyndaker, technical specialist.

Millennials Demand Changes in IT Strategy

Companies are increasingly forced to bend to Generation Y to get the best young talent.

By Heather Havenstein

LIKE MOST generations before it, Generation Y — those born between roughly 1982 and 2002 — has been stereotyped based on a cultural change identified with its era. In this case, the group is united by a hunger to use the latest technologies to communicate.

These digital natives — also known as millennials — are natural multitaskers, often simultaneously texting on a mobile device and instant-messaging on a PC without removing even one iPod ear bud. Many of this generation can't conceive of communicating without an instant messaging system or social network.

Now that members of Generation Y are graduating from college and entering the workforce, they're bringing with them a slew of technology demands. In fact, in many cases, they research the technology portfolios of potential employers before agreeing to schedule job interviews.

Because this generation's demands are vastly different from those of earlier groups, many companies are struggling to find ways to satisfy them. Businesses that don't may find themselves struggling to hire and keep the most talented young workers, say some experts who have studied Generation Y.

Ron Alsop, a columnist for *The Wall Street Journal* and author of *The Trophy Kids Grow Up*, said that many recent entrants into the workforce face a culture shock from Day One. Alsop's book, due out next month, looks at how the new generation is already shaking up the workplace.

The first millennials are often landing in offices without IM technology or access to social networks, Alsop noted. It's possible that these employers are avoiding new technologies because of security concerns or budgetary constraints, but in doing that, they're sending up instant red flags for new workers.

"Companies really need to loosen up a bit and not play Big Brother too much by worrying about blocking certain social networking Web sites," Alsop said. "Companies have to realize that they need to meet millennials halfway."

Some forward-thinking large organizations are making moves to become more technology savvy, he noted.

For example, a group of recent MBA graduates hired by Johnson & Johnson successfully lobbied the New Brunswick, N.J.-based consumer products company to create an internal social network, according to an advance copy of Alsop's book. The network has grown to include virtual classrooms for training and a career counseling center.

The company is now looking to broaden the network beyond its MBAs, Alsop wrote.

Meanwhile, Alsop said in an interview that Capital One Financial Corp. in McLean, Va., is creating internal discussion boards and its own version of Wikipedia in an effort to improve worker collaboration. And New York-based Ernst & Young LLP has developed a guide to help managers interpret IM shorthand.

DEMANDING WORKERS

At Long & Foster Real Estate Inc. in Chantilly, Va., Generation Y sales agents are seeking IT's help in marketing themselves on social networks, noted Mayur Raichura, vice president of information services. The young workers are also seeking the ability to create YouTube-like online video presentations that can be easily spread across the Web, he said.

Long & Foster is now evaluating different services that could be used to support those requests, Raichura added.

Paul Wright, IT director for education in the state of Missouri, said that almost half of his 58 employees are from Generation Y, requiring him to focus on embracing new technologies to retain them and recruit more of them.

For example, the state last year a launched virtual job fair program in the Second Life virtual world to attract talented millennials for IT slots. The program has already netted some quality hires, Wright said.

Next month, he plans to meet with colleagues in other state agencies to discuss ways they can use Second Life as well.

The state is also using the Facebook social network as a recruiting vehicle, he said.

Wright noted that the use of Web 2.0 techniques paint the Missouri Department of Elementary and Secondary Education as technically savvy while providing an inexpensive method of reaching out to potential workers across the world.

Wright said his unit is now considering requests for IM access.

"Being a state entity, we have to be very careful of the data we collect," he noted. "Anything [like IM] opens us up. We need to be extremely careful that we're not opening a hole that someone could hack into and get some data that we're responsible for."

Wright and other IT managers noted that the defining characteristics of millennials include their ongoing desire to learn new skills and their zeal for using bleeding-edge technology.

For example, Generation Y software developers at the agency are eager to try out new tools and languages as soon as they're available. Wright noted that he often allows these workers to research the tools to determine whether they would benefit the organization.

But after such trials, Wright said, he frequently has to explain ROI ramifications to the young IT workers. "We have to come to an understanding that there is that balance between the latest and greatest technology and being responsible from a fiscal standpoint," he said.

Linda Gravett, author of *Bridging the Generation Gap: How to Get Radio Babies, Boomers, Gen Xers, and Gen Yers to Work Together and Achieve More* (Career Press, 2007), noted that the millennials she interviewed were clearly reluctant to work for companies lacking Web 2.0 and other emerging technologies.

Attendees at the Missouri virtual job fair on Second Life.

Gravett agreed that IT organizations can have a hard time getting budgetary approval for expensive technology that is demanded by only a subset of the workforce. She suggested that IT managers keep track of whether a lack of such technology is prompting talented employees to leave.

With that information, companies can compare job-turnover costs to the price of new technologies to help justify a purchase.

Gravett also advises that companies create focus groups with workers of all ages to keep tabs on technology needs.

NEW ATTITUDES

Adam Sarner, an analyst at Gartner Inc., suggested that organizations study how to best handle the attitudes of Generation Y workers.

A millennial, he noted, is accustomed to using social networks and contributing his or her own content to the Internet. The generation also tends to judge people based on their technical acumen, Sarner said.

Such attitudes may cause problems within a traditional corporate hierarchy, where some top executives may lack strong technology skills. Generation Y workers are also more likely to argue that technology can be used to improve long-established business processes, Sarner said.

"Some of the old ways of doing things are absolutely being questioned," he noted. "The workplace is going to have more explaining to do than 'This is the way we've always been doing things.' "

But in at least some cases, Alsop warned, IT managers must make sure that the new generation uses Web 2.0 technologies according to corporate dictates.

For example, the workers now graduating from college appear to have far fewer privacy concerns than older employees and thus need training about the dangers of sharing corporate information online, he said.

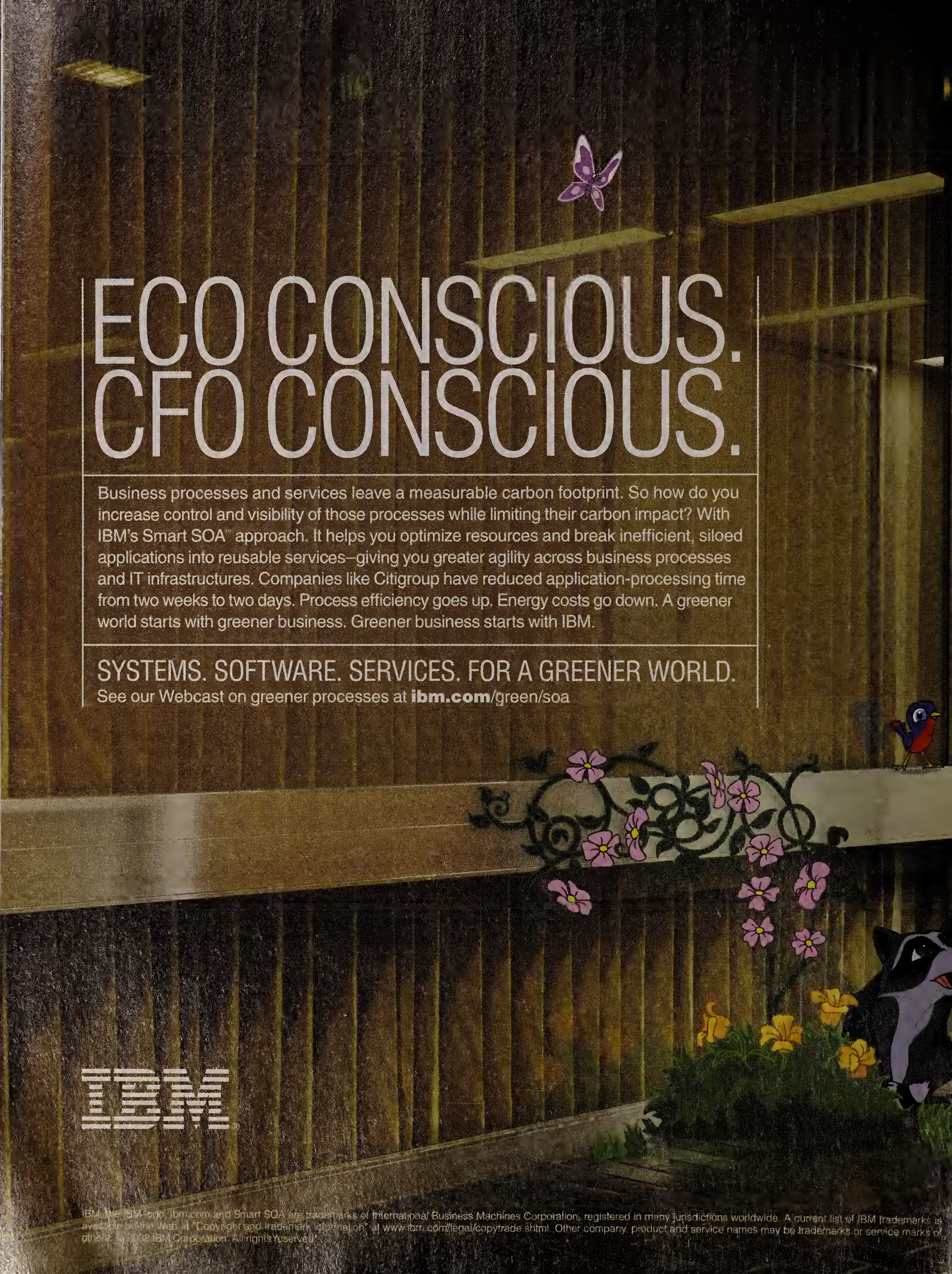
The state of Missouri, for example, is developing new rules to guide employee use of virtual worlds and social networks. The guidelines require that employees assume that activities in virtual communities are public and that any data posted online may be visible for a long time. Also, any employee conducting business for the state in a virtual community must have explicit authorization from management.

Despite the growing number of millennials in the corporate workplace, some companies have not yet had to address the issue.

David Berry, a senior vice president and CIO at Coty Inc., noted that the New York-based cosmetics company doesn't yet employ many younger workers. He added that its IT unit has been too busy integrating companies, implementing new products and rolling out new applications to think about Generation Y yet.

But Alsop warned that such companies must start finding ways to address the needs of Generation Y if they want access to the best talent entering the workforce.

"More and more students are going to ask them what their technology environment is like," he added. "What will wake up companies to this is when they fail to recruit the students they want." ■



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« Tata's Tax Mantra application is in use at Tucson City Hall.

Indian Outsourcer Reshapes Tucson Tax System

Globalization brings offshore services firms into the state and local government IT mix.

By Patrick Thibodeau

INDIAN IT FIRM Tata Consultancy Services Ltd. is slowly taking on projects for state and local governments in the U.S., a market where the words *India* and *outsourcing* often make politicians and IT workers bristle.

Mumbai-based Tata isn't disclosing its full list of government clients in the U.S., but at least two are in Arizona. The firm has built tax systems for the cities of Phoenix and Tucson.

Tata's work on modernizing Tucson's city tax system was recently completed, said Gage Andrews, deputy director of the city's IT department.

Andrews downplayed any potential controversy surrounding the use of an Indian IT services provider. "With the globalization of IT, it's going to be pretty hard to find somebody that is only an American-based company," he said.

Tucson officials chose Tata after evaluating proposals from multiple vendors. Andrews said that Tata's experience in implementing similar systems elsewhere in Arizona was a key reason it was chosen.

The city's former tax system was outdated, made up mostly of homegrown Cobol applications running on a 20-year-old IBM mainframe computer, Andrews said.

Using J2EE tools, Tata engineers shifted the systems to Windows-based servers, allowing the tax applications to run on browsers. The new system now lets taxpayers manage their tax liabilities online, Andrews noted.

"What was impressive to us was Tata's ability to take an application that was not Web-based and turn it over to a Web-based application," he said.

Once Tata finished the project in May, the city's IT operation took over responsibility for it, said Andrews, adding that the Indian firm is providing ongoing maintenance and support.

Chris Dixon, an analyst at Input, a Reston, Va.-based research firm that focuses on government IT, predicted that more and more government operations in the U.S. will turn to foreign IT service providers.

Even if U.S.-based IT firms are hired as primary contractors, at least some of the work will likely be shipped overseas to keep costs down, he said.

But today, Dixon noted, few Indian companies are winning government work under their "own banners" as Tata has.

He added that consolidation in the worldwide IT services business is forcing many state and local governments to work with vendors based in other countries. For example, in 2004, Montreal-based CGI Group Inc. bought Fairfax, Va.-based American Management Systems, a company that had done extensive state and local government work in the U.S. for years.

> **"With the globalization of IT, it's going to be pretty hard to find somebody that is only an American-based company.**
>
> **GAGE ANDREWS,** DEPUTY IT DIRECTOR, TUCSON

Tata could acquire U.S. companies as well, Dixon noted. "If a Canadian firm can come into America and compete, there is no reason why an Indian firm can't do the same thing," he said.

Tata officials said the company decided to enter U.S. markets and others worldwide after gaining a wealth of experience using its tax and revenue system to modernize numerous Indian tax systems. Tata has faced bigger challenges in deploying its Tax Mantra system in its homeland than it has faced in the U.S., said Tanmoy Chakrabarty, a Tata Consultancy Services vice president and head of the firm's government industry solutions group.

In India, where many people don't own computers, Tata has had to resort to alternative approaches, including the use of kiosks. But such work-arounds weren't necessary in Tucson and other cities and states in the U.S., where most people have access to PCs, Chakrabarty said.

He predicted that Tata won't have difficulty adapting its system for use in other countries, either.

"The fundamental applications and principles of taxation have an underlying commonality of approach," said Chakrabarty, adding that he believes the system can be easily repeated, hence the word *mantra* in its name. ■

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THE GRILL

Regina M. Brooks

The **North Carolina Division of Child Development's** IT manager talks about taking a chance on a statewide **wireless rollout,** tweaking **performance** and engaging **remote workers.**

Regina M. Brooks supports 180 home-based child care caseworkers who monitor about 9,000 licensed child care facilities across 100 counties and 48,710 square miles of North Carolina.

Tell me about your recent deployment of wireless modems to field caseworkers. We provide them with a home office and a laptop computer, a portable printer and a wireless cellular card, which allows them to remain connected so they can upload their work data to a Web-based application that gets the data in real

Continued on page 20

Dossier

NAME: Regina M. Brooks

TITLE: IT manager, Division of Child Development

ORGANIZATION: North Carolina Department of Health and Human Services

LOCATION: Raleigh, N.C.

HER PERFECT DAY: "That is a dream. I would really enjoy having a day where I could go to the wonderful North Carolina coastline and have an umbrella and a great book and a cooler with my iced tea, and just kick back and listen to the waves and my music. Boy, would that be wonderful."

WHEN SHE LAST DID THAT: "Five years ago. That's embarrassing!"

SOMETHING PEOPLE DON'T KNOW ABOUT HER: She rides a red Honda 750 Shadow American Classic motorcycle. "When I pull up on the motorcycle, people kind of freak."

SPORT: Running. She has finished one marathon and several half-marathons.

MOST RECENT BOOK READ: *The Covenant With Black America*, edited by Tavis Smiley

FAVORITE FILM: Anything with Denzel Washington. "My husband says, 'I know you're not watching that movie. You're just watching Denzel.' And I say, 'True, true, true.' "

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> **We had made [remote employees] a promise that we would not hurt their existing level of service but would improve it.**

Continued from page 18

time. It has really benefitted our staff. Prior to going to wireless, they initially had dial-up access in their home offices. Later, they received wired broadband connections, but they still had to fill out their assessments on the road, then go back to their home offices, put the information in and then upload it. Going to wireless cellular service allowed us to provide mobility with connectivity. So they can receive and upload data while they're at the facility they're inspecting.

How did you begin deploying the Verizon Wireless AirCards? The equipment that we use, we lease from an outside vendor. We had to work in conjunction with our IT staff, the outside vendor and Verizon Wireless to set up how this would actually work and to make sure the performance met our criteria for security and operations. Once that was established and tested, which took several months, we took those details out to regional meetings held by the department to teach the caseworkers how the AirCards worked and what the expectations were. Once that was done, they were actually ready to go that same day.

When was everyone in your division using the AirCards on a regular basis? Our goal was by May of 2007 to have everybody deployed with the wireless in areas where we knew it would work. They were given 30 to 45 days to test it out. They also kept whatever other connectivity that they may have had at home, whether it was cable broadband, DSL or dial-up. We let them run the two simultaneously, which was quite a bit of an expense, until the service was proven. We had made a promise that we would not hurt their existing level of service but would improve it.

We also gave them the opportunity to travel around the state and do their jobs so they could give their feedback on how it performed. Many of the staffers within 30 days said to disconnect them from their cable broadband, DSL or dial-up because they were going totally wireless. With that, we were able to reduce our costs. Going to cellular wireless cut our costs almost in half.

How big a project was this for you and your IT department? It was huge. I would compare it to when we converted from dial-up to broadband. There are several pieces that are involved in making sure that you have key players on board and knowing what you are doing. You have to communicate with more than just one source. You have to review it all: what you're planning to do, how will it work and what impact will it have.

It's not only looking from the IT perspective, but we also had to look from the perspective of the employees. It was important that we made sure that they were brought into it. So we started small. We looked at areas where they knew there would be problems with wireless cellular service. We picked about four key staffers who were already only on dial-up because they were located in more challenging areas. When we did the trial, those results came back quite favorably. That gave us some indication, as we began to roll out, on what to expect.

Was everyone able to use wireless cellular? We still have a few people who have no wireless at all or have both wireless for being in the field and broadband cable, DSL or dial-up for their home offices. The majority are wireless only. Out of the 180, I would say about 10 to 12 do not have wireless cellular service because in the area that they live in, the wireless did not meet the threshold for download and upload. We're constantly staying in touch with Verizon as they work to improve that performance. There are staffers who really, really want it because they hear the feedback from their colleagues about how great it is.

Once the wireless decision was made, how long did it take you to get up and running? We were fully functional in about four months. We received feedback, because our staffers are by no means silent sufferers. We constantly stayed on top of this with Verizon. They could give us data analysis quickly on performance monitoring and about things they could do to tweak it or things we could do, like add an antenna inside a worker's house for better performance. We've been able to add some components for workers who were in locations that were a bit more challenged.

Through the process, we learned so much that we were able to help other agencies that have gone down this route.

Were there any other things that you've done to help your remote workers? We're incorporating some tools that will help staff working from home stay more engaged. That's one of the greatest challenges. Some of the team meetings that take place are either done by sharing documents and/or phone calls, but the majority is done through e-mail. We're trying to eliminate as much [e-mail] as possible because it is becoming such a burden on staffers. We're working to have a vehicle where they can go with a project that they're working on and have discussion groups. We're doing a pilot right now with [Microsoft] SharePoint using field and in-house staff.

The second thing is, we're going to be doing more webconferencing. We're going to do a pilot where we put small cameras on laptops for remote workers and cameras in-house so they can see each other across the Web.

— Interview by **Todd R. Weiss**

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OPINION

Virginia Robbins

Nice Folks Really Do Finish First

A FRIEND RECENTLY spent five hours in the emergency room. Now, I've never found the emergency room a pleasant experience. What do you expect when people in crisis bump up against a rigid bureaucracy? But my friend decided that while she was there, she was going to be nice to everyone she dealt with.

When she got bumped and had to wait longer for her CAT scan, she chose to speak nicely to the attendant. When the doctor finally saw her, she praised him for his warm hands and kind manner. By the time I arrived to see how she was doing, everyone knew her, and they bent the rules so I could stay and talk longer.

This sort of thing happens in our workplaces, too. Being nice creates a competitive advantage.

All other things equal, people will pick the nice over the not nice. When head count has to be reduced, pleasant, caring and respectful employees are more likely to avoid the ax. Nice gets the edge during the hiring process as well. Don't believe me? Think back to the last time you had a choice among candidates for your team. Given equal skills, I bet you picked the one you perceived as more apt to be kind.

But the skills do have to be there. Niceness does not replace competence. Employees who always remember to bring a cake to work on co-workers' birthdays are most likely very nice people, but if they don't contribute much more than that, they won't last long.

Being nice also requires having a backbone. If your job is to enforce standards but you look the other way in the interest of avoiding conflict, then you aren't doing your job. Some might call you nice, but I'd call you weak and ineffectual — a doormat.

Even nice people can say no when that's what the job requires. The trick is to be firm, polite and considerate. You'll find that this approach gets you listened to a lot more than being firm and brusque.

But I'm in IT, you say. When do I have the opportunity to be nice?

"But I'm in IT," you say. "When do I have the opportunity to be nice? People are always demanding things from me, and they want it yesterday. If I take a moment for a few pleasantries, I'm suspected of being a slacker."

My hospitalized friend works in IT, and being pleasant in all her work interactions is one of her primary goals. She has consciously decided that she must say at least one nice thing in every encounter she has, wherever it is. At the hospital, she thanked the attendant for his care, she sympathized with the busy nurse over her schedule, and she complimented the doctor on his skill. Even running a fever of 102, she managed to acknowledge the efforts of the people around her.

She does the same thing at work. Before meetings, she asks people how they are, and then she really pays attention to the answers. After meetings, she notices any and all looks of concern and then follows up with those people, asking whether the meeting accomplished their objectives and (again) really listening to what they say. Then she offers positive suggestions.

When people call her with questions, she doesn't simply give them answers. She gauges whether the caller is rushed, frustrated or both, and then she crafts her answer accordingly; she either responds immediately, or she takes an extra second or two to sympathize and share a chuckle.

As I said, all this is a conscious effort on her part. She told me that she makes it into a game, setting goals for herself: How many people can she make smile in one day? One hundred? Two hundred?

She figured that by the time she left the emergency room that night, her day's count had increased by about 60 people, putting her within reach of a daily record.

Hearing this, I had to smile. Could competitive niceness be the next Olympic sport? ■

Virginia Robbins *is a former CIO who is currently the chief administrative officer responsible for bank operations at the California Bank of Commerce. You can contact her at vrobbins@sbcglobal.net.*

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TOP 500
TOP 500
TOP 500

Scaling MOUNT Exaflops

The Top500 list is always climbing to new heights. CAN WE BELIEVE THE HYPE?

By Gary Anthes

EVERY JUNE AND NOVEMBER, with fanfare lacking only in actual drum rolls and trumpet blasts, a new list of the world's fastest supercomputers is revealed. Vendors brag, and the media reach for analogies such as "It would take a patient person with a handheld calculator *x* number of years (think millennia) to do what this hunk of hardware can spit out in one second."

The latest Top500 list, released in June, was seen as especially noteworthy because it marked the scaling of computing's then-current Mount Everest — the petaflops barrier. Dubbed "Roadrunner" by its users, a computer built by IBM for Los Alamos National Laboratory in New Mexico topped the list of the 500 fastest computers, burning up the bytes at 1.026 petaflops, or more than 1,000 trillion arithmetic operations per second.

A computer to die for if you are a supercomputer user for whom no machine ever seems fast enough? Maybe not. Richard Loft, director of supercomputing research at the National Center for Atmospheric Research in Boulder, Colo., says he doubts Roadrunner would operate at more than 2% of its peak rated power on NCAR's ocean and climate models. That would bring it in at 20 to 30 teraflops — no slouch, to be sure, but so far short of that petaflops goal as to seem more worthy of the nickname "Roadwalker."

"The Top500 list is only useful in telling you the absolute upper bound of the capabilities of the computers," Loft says. "It's not useful in terms of telling you their utility in real scientific calculations." The problem, he says, is that placement on the Top500 list is determined by performance on a decades-old benchmark called Linpack, which is Fortran code that measures the speed of processors on floating-point math operations — for example, multiplying two long decimal numbers. It's not meant to rate the overall performance of an application, especially one that does a lot of interprocessor communication or memory access.

Moreover, users and vendors seeking fame high on the list go to elaborate pains to tweak their systems to run Linpack as fast as possible — a tactic permitted by the list's compilers.

The computer models at NCAR simulate the flow of fluids over time by dividing a big space — the Pacific Ocean, say — into huge grids and assigning

ILLUSTRATION BY TIM BOWER

each cell or group of cells in the grid to a specific processor in a supercomputer. It's nice to have that processor run very fast, of course, but getting to the end of a 100-year climate simulation requires an enormous number of memory accesses by a processor, something that typically happens much more slowly. In addition, some applications require passing many messages from one processor to another, which can also be relatively slow.

So, for many applications, the bandwidth of the communications network inside the box is far more important than the floating-point performance of its processors. That's even more true for business applications, such as online search or transaction processing.

An even greater bottleneck can crop up in programs that can't easily be broken into uniform, parallel streams of instructions. If a processor gets more than its fair share of work, all the others may wait for it, reducing the overall performance of the machine as seen by the user. Linpack operates on the cells of matrices, and by making the matrices just the right size, users can keep every processor uniformly busy and thereby chalk up impressive performance ratings for the system overall.

"As long as we continue to focus on peak floating-point performance, we are missing the actual hard problem that is holding up a lot of science," Loft says.

But the "hard problem" is getting the attention of computer and chip makers. IBM, which makes the Blue Gene family of supercomputers, has taken a systems approach. Rather than cobbling together commodity processors with commodity interconnects like Ethernet or InfiniBand — an approach that others have used — IBM built five proprietary networks inside Blue Gene, each optimized for a specific kind of work and selectable by the programmer. Members of the Blue Gene family held the No. 1 and No. 2 positions on the Top500 list until June of this year.

By making memory access faster, and by doing it more cleverly, the absolute amount of memory in a system can be reduced, says Dave Turek, vice president of Deep Computing at IBM. As engineers work to build "exascale" computers (a thousand times faster than Roadrunner), that will be essential, he says. "Going back a few years, you'd build a computer with the fastest processors possible and the most memory possible, and life was good," Turek says. "The question is, how much memory do you need to put on an exascale system? If you want to preserve the kinds of programming models you've had to this point, you'd better have a few hundred million dollars in your pocket to pay for that memory."

And it isn't just the purchase cost of memory that's a problem, Turek notes. Memory draws a lot of expensive power and generates a lot of heat that must be removed by expensive cooling systems (see story, page 29).

Faster memory subsystems and faster interconnects will help, Turek says, but supercomputer users will also have to overhaul the programming methods that have evolved over the past 20 years if they hope to utilize the power of exascale computers. He says users initially criticized Blue Gene for having too little memory, but eventually they were able to scale their applications to run well on 60,000 processors by changing the algorithms in their application code so they were more sparing in their memory use.

BEEP! BEEP!

IBM calls Roadrunner, which cost Los Alamos $120 million, a "hybrid" architecture because it uses three kinds of processors. Basic computing is done on an off-the-shelf, 3,250-node network, with each node consisting of two dual-core Opteron microprocessors from Advanced Micro Devices Inc. But Roadrunner's magic comes from a network of 13,000 "accelerators" in the form of Cell Broadband Engines originally developed for the Sony PlayStation 3 video game console and later enhanced by IBM. Each Cell chip contains an IBM Power processor core surrounded by eight simple processing elements.

The Cells are optimized for image processing and mathematical operations, which are central to many scientific applications. A Cell can work on all the elements in a well-defined string or vector, ideal for the matrix math in the Linpack benchmark. Los Alamos says the Cells speed up computation by a factor of four to nine over what the Opterons alone could do. Nevertheless, the lab says it expects its production programs to run at sustained speeds of 20% to 50% of the celebrated 1 petaflop benchmark results.

The advantages of using three kinds of processors come at a cost. Just as the Linpack code had to be optimized for the machine, so do most other programs. A recent report from Los Alamos said this of the effort required to get an important simulation tool to run on Roadrunner: "Accelerating the Monte Carlo code called Milagro took many months, several false starts

Continued on page 28

Test Bench

IF THE TOP500 LIST of supercomputers is based on such a narrow criterion – floating-point performance – why isn't a better benchmark used?

"I believe that you could come out with a measure that's more useful for what we do," says Richard Loft, director of research and development for supercomputing at NCAR, which models the Earth's oceans and atmosphere. Such a measure, he says, might already exist in something called the HPC Challenge Benchmark, a suite of tests sponsored by the Defense Advanced Research Projects Agency and developed at the University of Tennessee. The tests consist of the Linpack floating-point benchmark plus six others that measure things such as integer math, memory updates, sustainable memory bandwidth and interprocessor communications.

"The good news – or the bad news – about the Linpack number is it's a single number," says University of Tennessee professor Jack Dongarra, who chose the benchmark years ago to rank computers for his list of "fastest" computers.

"If I knew the user's application, I might be able to say that you need to weight various metrics in a certain way to compare systems," he says. "But that reduction is hard to do, and I couldn't do it in the abstract for the Top500 list."

– GARY ANTHES

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Continued from page 26

and modifications of 10% to 30% of the code." But in the end, the lab said, Milagro ran six times faster with the Cell chips than without them, and that was "a crucial achievement for the acceptance of Roadrunner."

Andrew White, Roadrunner project director at Los Alamos, told *Computerworld* that the effort to port and optimize code for Roadrunner was "less than we thought it would be" after programmers got some experience with it. A program with "tens of thousands of lines of code" is taking about one man-year to get going on the supercomputer, he said.

INVOKING SPECIALIZATION

University of Tennessee computer science professor Jack Dongarra is one of the developers of the Linpack benchmark and a co-publisher of the Top500 report. He calls Roadrunner a "general-purpose computer" but one that, because of its hybrid architecture, "specializes in what it can do." Invoking that specialization is not trivial, he admits.

"If you are writing a program for Roadrunner, you essentially have to write three programs — one for the AMD Opteron processor, one for the Power core that's on the Cell chip and one for the vector units in the Cell chip," he says. "The only way to get to a point where you'd be happy with the performance is to rewrite your old applications. The guys at Los Alamos believe that they can in fact benefit by rewriting their code."

Dongarra says a computer at the top of the Top500 list will typically spend six years on the list before falling off the bottom, and he doesn't expect Roadrunner's hybrid Opteron/Power/Cell architecture to stay on top for long.

"The trend is to large numbers of [processor] cores on a single die," he says. "And it looks like we'll have this one chip with different kinds of cores on it. We might have cores that specialize in floating point, ones that specialize in graphics and those that are more commodity-based." Exploiting that flexibility so the chip is, in essence, tuned for a specific application domain, such as climate modeling, will require software tools that do not yet exist, he says.

The Top OF THE Top500

SINCE JUNE 2008
IBM Roadrunner
Los Alamos National Laboratory
Speed: 1.026PFLOPS

NOVEMBER 2004 - JUNE 2008
IBM Blue Gene/L
Lawrence Livermore National Lab
Speed: 478TFLOPS

JUNE 2002 - NOVEMBER 2004
NEC Earth Simulator
Japan
Speed: 35.9TFLOPS

NOVEMBER 2000 - JUNE 2002
IBM ASCI White
Lawrence Livermore National Lab
Speed: 7.2TFLOPS

JUNE 1997 - NOVEMBER 2000
Intel ASCI Red
Sandia National Laboratories
Speed: 2.4TFLOPS

NOVEMBER 1996 - JUNE 1997
Hitachi CP-PACS
Japan
Speed: 368GFLOPS

JUNE 1996 - NOVEMBER 1996
Hitachi SR2201
Japan
Speed: 220GFLOPS

NOVEMBER 1994 - JUNE 1996
Fujitsu Numerical Wind Tunnel
Japan
Speed: 170GFLOPS

JUNE 1994 - NOVEMBER 1994
Intel Paragon XP/S140
Sandia National Laboratories
Speed: 143GFLOPS

NOVEMBER 1993 - JUNE 1994
Fujitsu Numerical Wind Tunnel
Japan
Speed: 124GFLOPS

JUNE 1993 - NOVEMBER 1993
Thinking Machines CM-5
Los Alamos National Laboratory
Speed: 58GFLOPS

SOURCE: TOP500.ORG

Intel Corp. is doing as Dongarra suggests — developing specialized microprocessor cores and the software tools to exploit them. It's also responding to Loft's plea for faster memory access. Bandwidth aside, memory will have to be more power-efficient if exascale computers are to draw reasonable amounts of power, says Steve Pawlowski, an Intel senior fellow. He says both objectives can be met in part by building bigger on-chip cache memories that act as very fast buffers between processor cores and dynamic RAM.

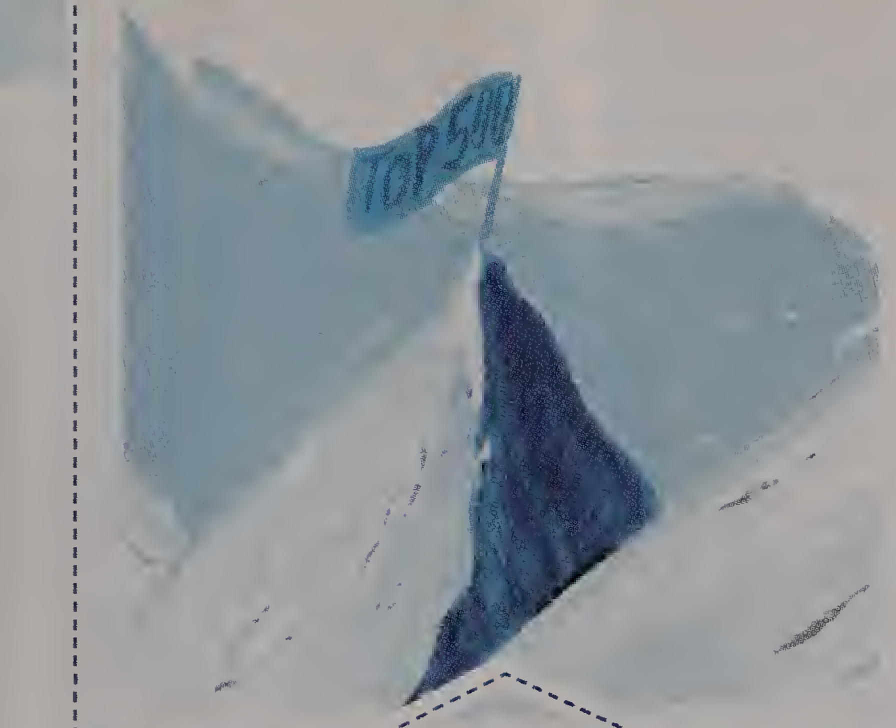
"If you can cache a significant number of DRAM pages, the machine thinks it's talking to flat DRAM at high speeds, and you can populate behind it much slower and more power-efficient DRAMs," he says. "You want the cache big enough to hide the [memory] latency, and you want to be clever in how you manage the pages by doing page prefetching and things like that."

He says Intel is also working on increasing the communication bandwidth of the individual pins that connect the processor chip to the memory controller. "I'd like to push the memory bandwidth to be 10 times greater than it is today by 2013 or 2014," Pawlowski says. "The engineers working for me say I'm crazy, but it's a goal."

In the meantime, Intel and others are working on one or two other possibilities — very high-speed communication via silicon photonics (light) and "3-D die-stacking," which creates a dense sandwich of CPU and DRAM. Both technologies have been proved in labs but have not yet been shown to be economically viable for manufacturers, Pawlowski says.

Petaflops, peak performance, benchmark results, positions on a list — "it's a little shell game that everybody plays," says NCAR's Loft. "But all we care about is the number of years of climate we can simulate in one day of wall-clock computer time. That tells you what kinds of experiments you can do." State-of-the-art systems today can simulate about five years per day of computer time, he says, but some climatologists yearn to simulate 100 years in a day.

"The idea," Loft says, "is to get an answer to a question before you forget what the question is." ■



MOVING BEYOND Petaflops

Steve Pawlowski, an Intel senior fellow, predicts that we will see computers running at "sustained exaflops" (1,000 petaflops) by 2017 or 2018. He says it will require major advancements on several fronts – processors, memory, interconnects and software.

And, Pawlowski says, advances will be required to make hardware more energy-efficient. An exaflops machine might draw 100 megawatts of electricity – enough to power a small city, he points out. That would be workable at Los Alamos National Laboratory, which has giant cooling towers for its computers, but not at your garden-variety data center.

But the payoff could be significant. Because of rapid advancements in multicore (Intel now calls them "many-core") chips, an exascale computer might have millions of processor cores capable of executing billions of software threads simultaneously.

"It seems incomprehensible now," Pawlowski says, "but those million threads that IBM claims to do on their high-end Blue Gene systems were incomprehensible five years ago."

– GARY ANTHES

WHAT'S IN STORE FOR 2017

Here's a look at some of the highlights of Intel's predictions for the future of supercomputing:

- **Sustained speed:** 1 exa-ops (10^{18} operations per second)
- **Processor cores:** From 5 million vector cores to 100 million scalar cores
- **Possible threads:** Billions and billions served
- **Unanswered question:** "How will you program it?"

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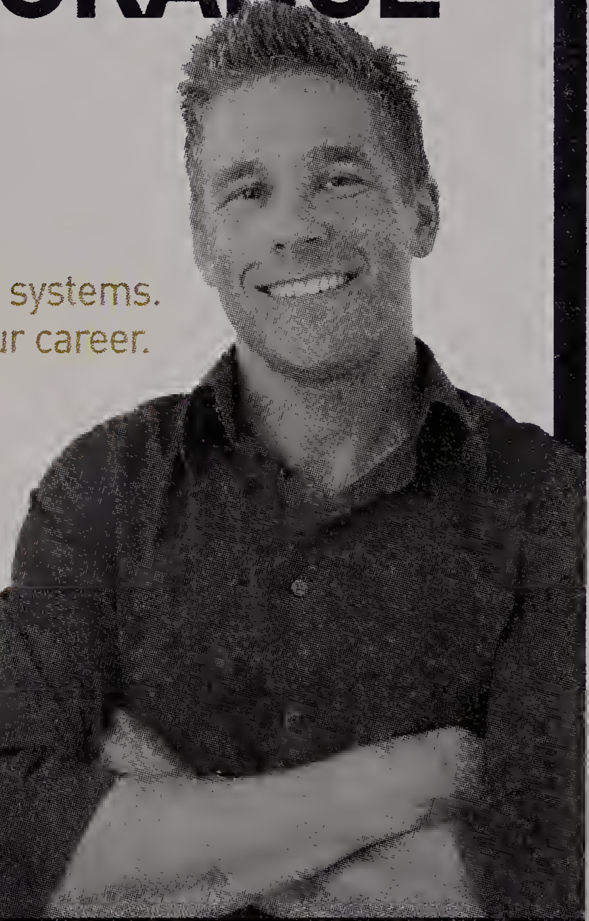

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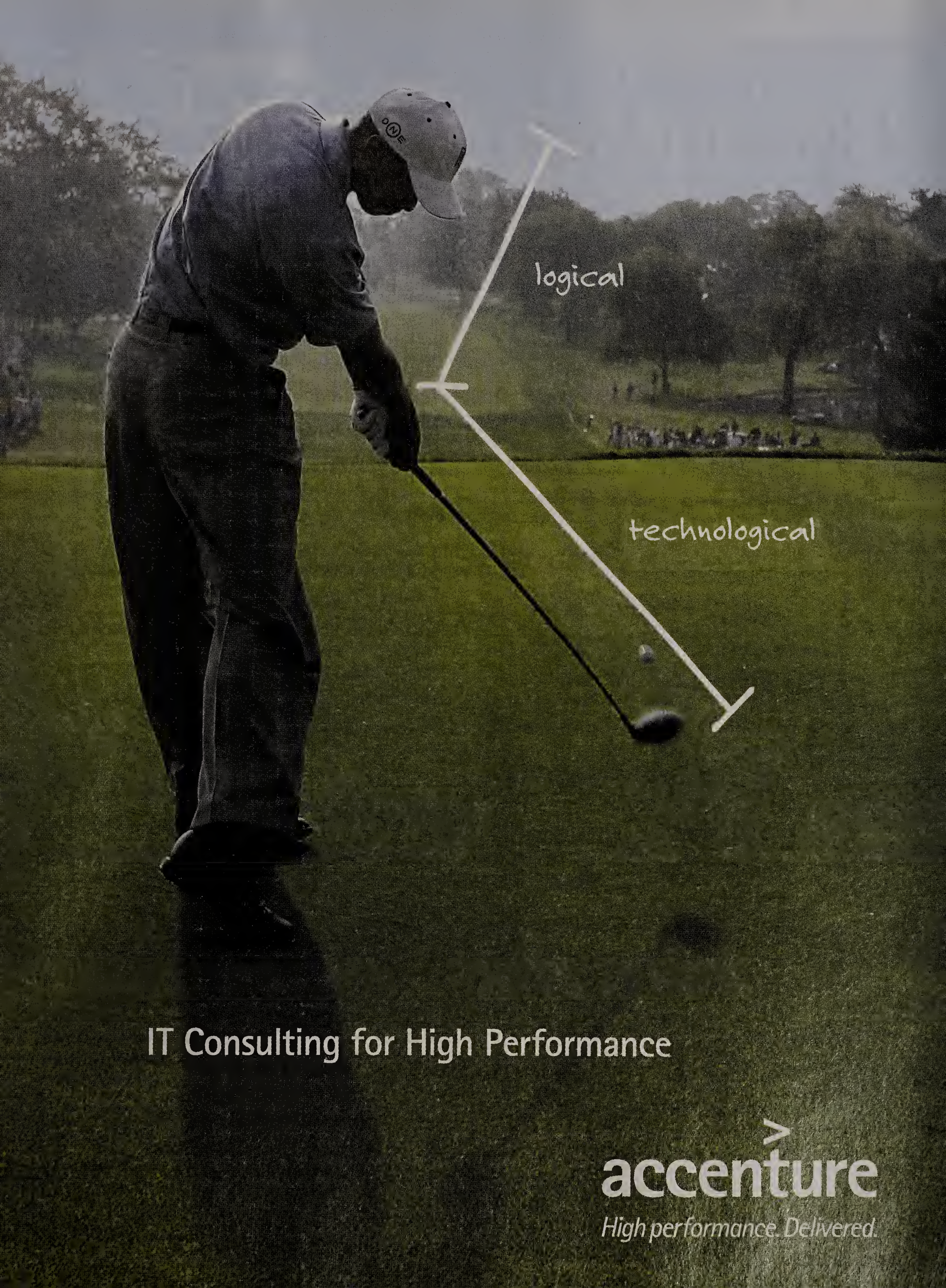
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How to Earn Your Boss's TRUST

Above all, upper management wants predictability. Here's how to provide it.

By Michael Strange

SENIOR management prizes one simple attribute: predictability. Whether they communicate this value clearly or not, predictability can be more important to your bosses than cost. Trust emerges from the intuitive belief that things are under control. Things are not under control if delivery cannot be predicted accurately.

Management is trained to deal with problems and make decisions, given accurate information. So it's no wonder that deep frustration results when operating departments (including IT) uncover last-minute inaccuracies, leaving management with no ability to control the outcome. Imagine a manufacturing department that regularly encounters last-minute issues in production rates or quality.

Michael Strange: Predictability can be more important to upper management than cost.

Many IT departments measure status, quality, cost, effort, architectural reuse and a variety of other technical metrics, but most don't measure predictability. They should, however. In fact, IT should adjust some of its key metrics and related behavior to encourage and enhance predictability.

Here are some ways IT can do that:

1 **Create a culture of estimating and measuring.** Require all IT staff members to estimate the effort needed for all of their activities. Then measure actual results. In my experience, extreme variances will be common and should be discussed. But don't yell at the junior programmer for being 200% over his estimate. Instead, use it as a learning experience. Help him understand what went wrong, and coach him to do better next time. Without this learning culture, programmers and project managers are encouraged to "sweep it under the rug," which means that they learn nothing about predictability.

2 **Reward openness regarding problems.** I have been shocked over and over by programmers who say, "I was afraid to tell you about this problem." It's essential to create project teams that work together to identify and work on outstanding issues, not hide them. Last-minute complications will be reduced, and predictability will improve measurably.

3 **Don't authorize long-running projects whose length precludes the ability to predict effort.** Don't estimate the effort needed to develop a system when the requirements aren't clear. Effort will be impossible to predict. In these situations, divide the project into phases in which the effort and results are predictable.

4 **Don't allow senior management to force you to estimate a project too early.** You'll be setting yourself up to fail, and that means your delivery will be unpredictable.

5 **Understand that uncertainty is not a failing; it's a nod to reality.** Software development is at the intersection of artistic creativity and manufacturing. No two projects are exactly the same, and so there is inherent variability in the levels of effort required. In one recent case, a CIO presented the board with an estimate of 12,462 staff hours to complete the development of the next-generation software system. There was no contingency plan to allow for exigencies and adjustments.

Don't present such plans. They set an expectation for extreme accuracy, which is almost impossible for these kinds of projects. If you can run numerous IT projects simultaneously that are accurate to within 15% to 20% of the original estimate, you are above average in your predictability.

Predictability is the key emotional factor that builds confidence. If the plumber couldn't tell you how long it would take to replace the sink, you wouldn't hire him. Build and reinforce a culture of specialists whose estimating and predicting skills are continuously improving and being rewarded. Your annual budgets and plans will improve, and management's respect for IT will grow. ■

Strange *is a regional director at Neudesic LLC in Los Angeles. Contact him at mike.strange@neudesic.com.*

IMPROVING PREDICTABILITY

- Make predictability one of your key metrics for measuring value.
- Reward attempts to predict results, even if they are initially inaccurate.
- Talk to senior management about the relationship between predictability and results.
- Don't estimate development schedules without clear requirements.
- Split up any project that's over six months in length or that you can't estimate to within 20% accuracy.
- Add contingency plans; they're not an admission of failure.

– MICHAEL STRANGE

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Best Practices IN GREEN IT

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Judging Criteria

Judges evaluate and rank the finalists in each category according to their substantiated green IT solution attributes and achievements against a set of criteria such as:

- Strategic importance to the business.
- Positive impact on other business/organization units.
- Substantive customer impact (service, retention, acquisition).
- Provides a strategic advantage to the business/organization while anticipating and accommodating the deployment of future green IT initiatives.
- Financial return and measurable payback (returns on investment, assets, resources) through created/protected revenue opportunities or cost savings.
- Addresses challenges of data, information and application security, etc.

Congratulations Award Recipients!

Computerworld's Green IT Symposium proudly announced the results of the "Best Practices in Green IT" Awards Program. This program honors IT user "Best Practice" case studies selected from a field of qualified finalists.

Honoree Award Recipients in each of the following categories were recognized during the Gala Awards ceremony at the Green IT Symposium in National Harbor, Maryland, on September 18th:

Green IT in the Data Center

***Honoree:* Avnet, Inc.**, Phoenix, Arizona

Finalists:

- **BT Group plc**, London, United Kingdom
- **eNation Corporation**, Calgary, Alberta
- **IBM**, Somers, New York
- **Unisys Corporation**, Eagan, Minnesota

IT Leadership in Embracing Change with Green IT: Corporate Responsibility

***Honoree:* Enterprise Rent-A-Car**, St. Louis, Missouri

Finalists:

- **Applied Materials**, Santa Clara, California
- **HSBC**, Salinas, California
- **Procter & Gamble**, Cincinnati, Ohio
- **Southern Company**, Atlanta, Georgia

Reducing IT Complexity Increases Green IT

***Honoree:* Adelphi University**, Garden City, New York

Finalists:

- **Dell, Inc.**, Round Rock, Texas
- **Infosys Technologies Limited**, Bangalore, Karnataka
- **Sprint Nextel**, Overland Park, Kansas
- **University of California Irvine**, Irvine, California

ROI in Green Computing

***Honoree:* Miami-Dade County Public Schools**, Miami, Florida

Finalists:

- **gm2 Logistics Limited**, Erith, United Kingdom
- **Indiana Office of Technology**, Indianapolis, Indiana
- **IT-Systemhaus der Bundesagentur für Arbeit**, Nürnberg, Germany
- **United States Government Printing Office (GPO)**, Washington, D.C.

Making Enemies, But Needing Allies

Security issues **have been ignored** a long time. **Change** is needed, but that rubs some people **the wrong way.**

Trouble Ticket

AT ISSUE: New processes and policies are needed, but relationships with the rest of IT are suffering.

ACTION PLAN: Try to defuse the situation without calling in backup – the CIO.

MY NAME is mud within IT right now.

Our fledgling security organization is starting to run into some significant relationship challenges. As we're beginning to build our information security program from scratch, we're causing some friction.

In my company, information security is part of the IT department, but like several other IT disciplines, it reports directly to the CIO. As a result, the infosec and IT support teams are peers, a relationship as uneasy as that of siblings. Over the past couple of weeks, tensions between our teams have been rising sharply. In fact, we could be looking at full-scale interdepartmental warfare. How did this come to this pass?

As we try to bring security to an acceptable level, we are introducing new policies and standards that are being met with hostility by the IT support teams. They will have to perform some of the remediation we have identified, such as patching and updating devices, cleaning up firewall rules and implementing redundant systems. So, basically we are telling them what to do — which they interpret as telling them how to do their jobs. And they don't like that.

This company does not tolerate change well, and the reaction has been less than mature. In fact, the company displays the lowest level of organizational and personal maturity that I have ever seen, and this attitude is apparent in our dealings with the rest of the IT organization. Reactions have ranged from pushback in response to the demands we have placed on the server teams to finger-pointing and name-calling.

When you apply ISO 27001 criteria to this company's security processes, the shortcomings are clear. Most of the processes are ad hoc and chaotic, depend on heroics, and rely on key people with specific knowledge and unique skill sets. What I want to do is to introduce a higher level of organizational maturity, with repeatable processes, common language and defined tasks. I hope one day soon to have uniform processes based on well-defined policies and solid methodologies.

■ All the IT departments are complaining loudly about information security, and with varying levels of tact – none very tactful at all.

But that is in the future. For now, we are trying to improve our corporate maturity by advocating a better set of practices, and that isn't going over well. And the information security team is the only group attempting to do this.

NOT WINNING ALLIES

The result so far has been ugly. All of the IT departments are complaining that infosec is asking too much. They are complaining loudly and with varying levels of tact (none of which are very tactful at all). While upper management remains confident that my group is doing the right thing, our stock among our peers is sharply declining, and they don't want to deal with us.

So far, we've taken a standard conflict-management approach to this situation. We are listening to all concerns, trying to find reasonable solutions and making sure we collaborate on everything. This hasn't been as successful as I'd like, although admittedly, things could be much worse. But we're losing traction, and the other IT teams are turning away from information security.

I'd hate to think that my only option is to bring down the hammer of the CIO. If we really are looking at interdepartmental war, that would have to be considered the nuclear option. Though it could help us accomplish what we want to get done, it would devastate relationships. I have to bear in mind that in winning this battle, we could lose the war of ongoing security improvement.

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JOIN IN

To join in the discussions about security, go to **computerworld.com/blogs/security**

What we need right now are allies. But it's hard to see where to find them at this point in time. ■

This week's journal is written by a real security manager, **"J.F. Rice,"** *whose name and employer have been disguised for obvious reasons. Contact him at jf.rice@engineer.com.*

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SPAM FILTERS: Making Them Work

Here are eight ways to get more out of your e-mail watchdog. **By Calvin Sun**

SPAM. It fills our in-boxes, wastes our time and spreads malware — and it's only getting worse. According to Ferris Research, which studies messaging and content control, 40 trillion spam messages will be sent in 2008, costing businesses more than $140 billion worldwide — a significant increase from the 18 trillion sent in 2006 and the 30 trillion in 2007.

In theory, e-mail filtering software and appliances allow "good" e-mail messages to pass through while stopping spam. But the filters can mistakenly allow spam to pass through (a false negative), or they can mistakenly block valid e-mail (a false positive).

Typically, after identifying a message as spam, the filtering software either blocks it or quarantines it, letting the recipient review it later. Although the latter method provides a chance to retrieve false positives, it requires time and effort that users often won't spare.

Users and organizations that receive spam pay about four cents per message to delete it, according to Ferris. But Richi Jennings, a Ferris analyst and a *Computerworld.com* blogger, says the cost of locating missing valid e-mails is far greater — about $3.50 per message.

Even worse, Jennings says, is that organizations can incur potentially greater costs through missed opportunities because of false positives they never see — such as a request for proposal that a consulting firm fails to receive.

COMBATING FALSE POSITIVES

On both the sending and the receiving ends, minimizing false positives is critical for your organization. Here are some steps you can take.

1 **Use a spam filter.** False positives can leave you wondering if you should simply toss your spam filter. Don't.

False positives can occur even without a filter, such as when a user, seeing multiple spam subjects in an in-box, manually hits "delete" multiple times, not realizing that buried within the list is a legitimate e-mail. A state-of-the-art spam filter catches 97% to 99% of spam, says Jennings, thus helping prevent erroneous manual deletions.

2 **Locate your filter at the network DMZ.** A "demilitarized zone" in the context of a computer network is an area that buffers the private internal network from the public Internet. Systems in the DMZ are vulnerable to attacks from the outside, but they protect the internal network from outside attacks. Putting your spam filter at the DMZ allows it to monitor the characteristics of the connection and acquire more information about incoming e-mail messages, which can be critical to determining whether a message is spam, says Jennings.

3 **Invest in newer technologies.** Trade old, keyword-based technologies for newer ones, such as graylisting tools (see story, next page), says Michael Briggs, director of information technology at George Washington University Law School.

4 **Enlist users to help maintain your whitelist.** Users are constantly developing relationships with new clients, vendors and other contacts. If you rely on a whitelist of

trusted senders, remind users to keep you informed of new contacts so their messages get through quickly and don't risk being flagged as spam.

Better yet, let users set their own spam filter parameters, says Andrew Lochart, vice president of product marketing at e-mail security vendor Proofpoint Inc. Some business travelers, for instance, might actually want weekly airline or car rental notices.

5 Choose blacklists and reputation lists wisely. Jennings points out that many spam filters let the customer choose which blacklist, if any, to use. If your organization relies on a blacklist to stop spam, he recommends that you check the management policies of the lists. Briggs notes that some are driven purely by user complaints, so relying on them will invariably lead to false positives.

6 Make sure you're not a spammer. If spam goes out from your systems, even unintentionally, it can hurt your reputation and increase the likelihood that you'll end up on spam blacklists. If your e-mail address appears in the "from" line of enough spam, Jennings says, your reputation may suffer to the point that you will have trouble sending legitimate e-mail.

A three-pronged approach will help keep your reputation intact:

- Curb your users' questionable Web browsing, suggests Stephen Pao, vice president of product management at security vendor Barracuda Networks. If users visit dangerous or objectionable sites, malware from those sites could be installed on their computers, which could then be used to send spam.
- Stay up to date with security patches and virus and malware definitions to ensure that spammers can't take over your systems and use them to send spam, Pao says.
- Use outbound filtering to make absolutely sure no spam is being sent from your systems, Jennings suggests.

7 Check your own spam reputation. If your organization is on a blacklist, your recipients might not receive your outgoing e-mail. Lochart recommends regularly checking your own reputation by visiting sites such as Habeas.com, which provides companies with a free reputation check and helps them manage their online reputations.

If you find your company unjustifiably on such a list, Lochart suggests that you contact its administrator to voice your concerns. But getting "unblacklisted" can be difficult.

8 Warn users to be wary of red-flag words. In sending e-mail, avoid words that are associated with spam, says Lucio Gonzalez, a systems specialist and e-mail administrator at South Texas College in McAllen, Texas. These include *hey, hello, free, enlarge, pharmacy, alert* and *diploma.*

Conversely, try to include recipient-specific information in your messages, such as project names or personal references unique to your recipient. Doing so can lessen the chance that Bayesian analysis of your message will cause it to be flagged.

By reducing false positives, you help ensure that real e-mail from your senders actually gets to you and that real e-mail from you actually gets to them. ■

Sun *consults with clients to improve their organizational effectiveness.*

FILTERING TECHNIQUES

To minimize the false positives caused by spam filters, it helps to understand how these filters work. Here are some popular techniques, in rough chronological order of their development:

Keyword-based and Bayesian filters. The earliest filters searched a subject line and message for particular words, such as *Viagra*. More sophisticated versions employ Bayesian analyses, which combine keyword searches with techniques such as determining ratios of "good" to "bad" words.

Challenge-response. Unrecognized senders receive a reply asking them to validate themselves by supplying letters and characters that appear in images on screen, a technique also known as CAPTCHA (Completely Automated Public Turing Test to Tell Computers and Humans Apart).

Blacklisting, whitelisting and reputation listing. The filter evaluates not the message, but the characteristics of the sender.

- Blacklists are databases of the IP addresses of known spammers. The spam filter rejects e-mail from those addresses.
- Whitelists collect the IP addresses of trusted e-mail sources, and the filter automatically accepts e-mail from those addresses. Many spam filters use both blacklists and whitelists.
- Reputation lists broaden blacklists and whitelists by considering not only the sending IP address, but also the entire domain.

Graylisting. A system temporarily rejects e-mail from an unknown IP address and sends an automated response informing the sending system of the temporary failure. Theoretically, a "real" sender will resend the message; a spammer will lack the patience to do so.

Tarpitting. A service on the mail server slows down incoming connections for as long as possible. The delay is meant to discourage spammers by forcing them to take more time to send their spam. But legitimate e-mail also takes longer.

Recurrent pattern detection. These systems monitor the Internet for patterns in spam and maintain and update central databases of such patterns. Company e-mail systems using RPD query the database and reject e-mail identified as spam.

– CALVIN SUN

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Transactional Memory

Programmers are learning new ways to code for multicore computing systems.

By Russell Kay

WITH THE increasing use of multicore CPUs in computers, programmers have to learn new techniques for parallel processing. One very promising approach is transactional memory.

The primary problem for programmers is that multiple programming threads that are executed simultaneously by different processors must often access the same memory or stored data. It is difficult to determine in advance which thread will write its results first. If one thread changes data in memory, that may invalidate another thread's processing.

Thus, the system needs to make sure that the correct write operations take place at the proper time, without interference, disruption or undue degradation of performance.

To accomplish this, transactional memory runs code as "atomic blocks" inside a transaction, and all memory reads and writes are isolated until they are determined to be safe. *Atomic* here means that the code runs without interruption. When an atomic block completes, the system rechecks memory and looks for conflicts. Finding none, it executes the write operations, and these results become visible to the entire system.

If the system detects conflicts, however, it discards the transaction log and re-executes the block. When the contending threads are re-executed, they may proceed in a different order, thereby solving the conflict. While not exactly elegant, this solution seems to work well enough.

If an exception or error is somehow not handled inside the atomic block, all updates that block would make are automatically tossed away.

BETTER THAN LOCKS

Prior to transactional memory, the primary approach to concurrent or parallel programming was to use locks. In that method, a program or thread accessing a database or section of memory puts a lock on that stored data, preventing other threads or programs from accessing the data until the original program releases the lock. This approach, called pessimistic concurrency, may unnecessarily hold up other threads and can sometimes result in deadlock, where two (or more) threads each wait for the other to release a piece of data, bringing both threads to a halt.

With locks, programmers must identify conflicting operations to ensure correctness. They must avoid introducing deadlocks and balance the granularity at which locking is performed (i.e., how much data is locked up) against the increased overhead of fine-grain locking. But a bigger problem is that lock-based programs do not compose. That is, code fragments that are correct by themselves may fail when combined with other fragments.

Transactional memory uses what's called optimistic concurrency, which detects and can sometimes tolerate apparent conflicts at commit time. If two concurrent tasks work on the same data structure but do not really conflict, they can run at the same time, whereas a locking algorithm might cause one or both tasks to wait. Thus transactional memory can lead to more efficient code execution and permits more tasks to execute without waiting, increasing scalability. ■

Kay *is a* Computerworld *contributing writer in Worcester, Mass. Contact him at russkay@charter.net.*

Definition:

TRANSACTIONAL MEMORY is a programming approach for multiple CPUs designed to ensure that updates to shared memory are performed without interrupting or invalidating other code. Data changes are encapsulated in transactions and committed to memory only when safe – that is, when it's clear that they will not interfere with other code. If two or more updates will change the same location, those transactions are rejected, no changes are made, and each transaction must try again until it succeeds.

WHERE TO FIND TM SYSTEMS

Sun Microsystems Inc.'s forthcoming Rock family of multithreading, multicore Sparc microprocessors, expected to debut in 2009, will include hardware support for transactional memory. A programming approach Sun calls "hybrid transactional programming" will take advantage of the new hardware when available while hiding its limitations. For details about this, see "Hybrid Transactional Memory," by Peter Damron, Alexandra Fedorova, Yossi Lev, Victor Luchangco, Mark Moir and Daniel Nussbaum at *http://research.sun.com*.

And Microsoft Research is doing significant work on transactional memory, including adding support for existing languages such as C# and new languages such as Haskell and Atomos. For more information, see *http://research.microsoft.com*.

– RUSSELL KAY

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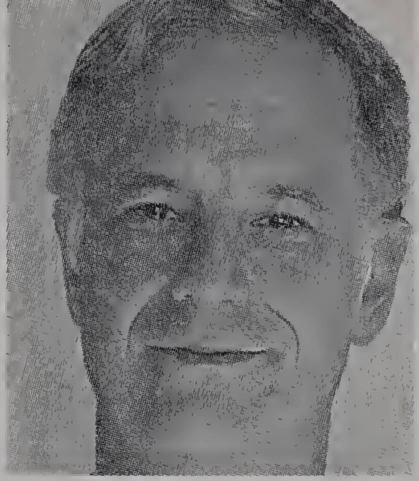
OPINION

Bart Perkins



Infrastructure: IT's Stepchild

EVERY ENTERPRISE needs a robust IT infrastructure in order to function effectively. Infrastructure is the foundation of corporate productivity and success. Many IT groups, however, don't have enough skilled infrastructure staffers to provide the solid foundation required.

Unfortunately, qualified infrastructure people are hard to find. Here's why:

- **Applications are more highly valued.** Most executives recognize that effective applications offer significant business value. Unfortunately, they usually assume that the underlying infrastructure is easy to construct and maintain. As a result, they often give less attention and recognition to infrastructure. (Even CIOs generally understand applications better than infrastructure.)

- **Infrastructure is increasingly complex.** The infrastructure group now manages a number of new technologies, including virtualization, advanced networking and cloud computing. In addition, infrastructure frequently has primary responsibility for privacy, security and standards. As the biggest energy consumer, infrastructure is also responsible for "green" initiatives, such as cutting IT energy use and complying with hazardous-substances mandates. All the pieces must then be knit together efficiently. As a result, infrastructure jobs require far more technical breadth and depth than ever before.

- **Infrastructure is becoming more customer-focused.** With the advent of software as a service, outsourcing and application software generators, IT needs fewer technical specialists. But infrastructure functions now require high levels of customer contact, because of ITIL v3's focus on customer service. Many technical staffers (often introverted, per the stereotype) are uncomfortable with this requirement.

- **Compensation is lower.** Historically, infrastructure departments offered entry-level IT jobs to individuals without college degrees. HR justified paying them lower salaries by claiming that they had fewer technical skills than their applications counterparts. Even though most low-skill infrastructure jobs have been automated and eliminated, perceptions have been slow to change. Compensation plans have not been adjusted to reflect the higher levels of technical expertise infrastructure now requires.

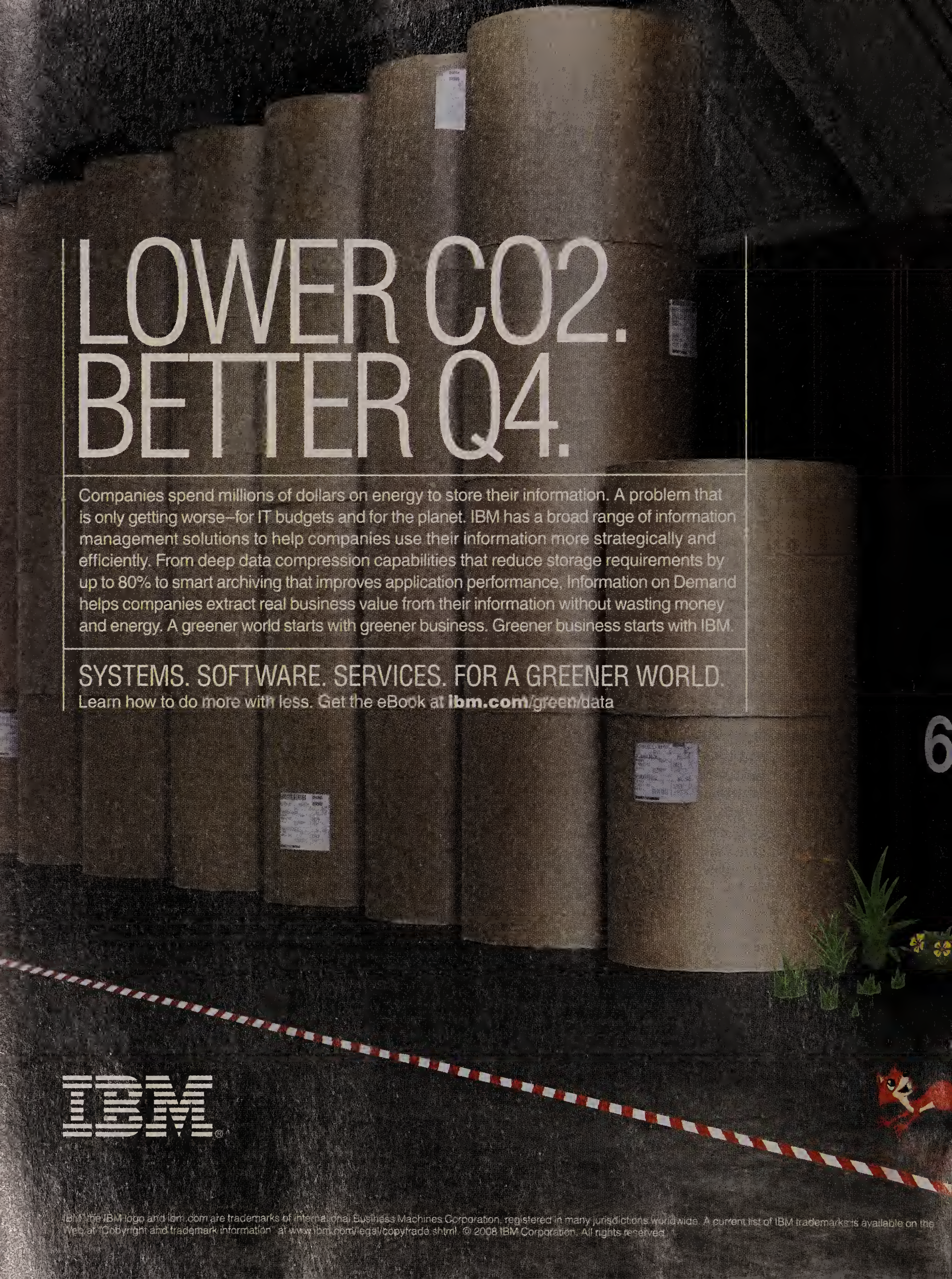
Executives often place a higher value on application functions and give less attention and recognition to infrastructure.

- **Infrastructure is a thankless job.** Unfortunately, many employees have a very limited understanding of infrastructure. Few people appreciate the difficulty of the preproduction testing or post-production tuning associated with installing a new system. This lack of understanding often leaves infrastructure staffs feeling undervalued and underappreciated. When the servers are up and the network is functioning, infrastructure availability is taken for granted. But when work stops because an application is unavailable or the network goes down, all fingers point to infrastructure. Infrastructure gets attention only for failures.

- **Infrastructure education is insufficient.** Few U.S. colleges offer IT courses covering infrastructure functions. In addition, most high school and college career counselors advise students that there are more job opportunities in applications than in infrastructure. Moreover, the head of applications is more often promoted to CIO than the head of infrastructure, so the long-term career path is not very appealing. The result is a shortage of qualified people pursuing infrastructure careers.

IT's infrastructure organization requires increasing levels of technical skills to deal with the complex and constantly shifting work environment. But lack of appreciation, lower compensation and a limited career path make it difficult to attract and retain qualified professionals. Infrastructure staffers need to be treated as invaluable employees who are critical to the success of the enterprise, because in today's IT environment, they really, really are. ■

Bart Perkins *is managing partner at Louisville, Ky.-based Leverage Partners Inc., which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.*



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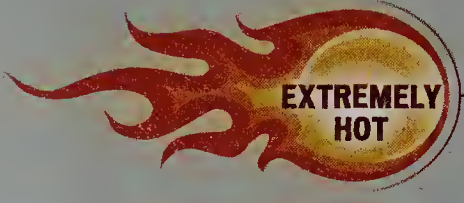
Career Watch

IT Roles, From Hot to Sizzling

In an Aug. 14 white paper, Forrester Research Inc. analyst Marc Cecere asks, **"What are the hot roles in IT?"** Several criteria were considered to take the temperature of these IT roles. For example, according to Cecere and co-author Laurie M. Orlov, a role could be hot because it requires intimate knowledge of a business, industry or region. Such highly specialized knowledge limits supply while boosting role relevance, Cecere wrote. Other factors at play include cross-disciplinary knowledge, the amount of risk and impact inherent in the role, limited external supply, and the pressure applied by trends within technology and the industry as a whole.

- **Account manager**
- **Desktop virtualization expert**
- **Mobile operations and device expert**
- **Service manager**
- **Business process analyst**
- **Storage director**

- **Enterprise apps strategist**
- **IT planner**
- **Network architect**
- **Enterprise project manager**



- **Data- and content-oriented business analyst**
- **Business architect**
- **Enterprise architect**
- **Vendor management expert**

- **Information/data architect**
- **Information security expert**

Stand Out With a Cover Letter

You might conduct your job search exclusively online, but that doesn't mean you should forgo that old standby, the cover letter. In a survey of 150 senior executives from the 1,000 largest companies in the U.S., **86%** of the respondents said that cover letters provide valuable insights into job candidates. Some **80%** of respondents to the survey, conducted by staffing firm OfficeTeam, said that cover letters accompany the electronic résumés they receive.

PAGE COMPILED BY JAMIE ECKLE.

Q&A

Jim Spohrer

The director of service research at **IBM** discusses the company's academic program and the Service Science Management and Engineering discipline.

How long has IBM been involved with SSME? In 2003, IBM began talking with universities about SSME and the need for professionals with better service-innovation skills. Today, over 200 universities in over 40 countries have started SSME-related initiatives. These typically combine content from engineering schools, management schools and the social sciences, such as economics.

As more nations around the world prepare service innovation road map reports, SSME and the need for service science are often mentioned as priorities. In many nations, businesses in the service sector account for more than two-thirds of GDP and jobs but less than one-third of R&D investment. SSME is becoming a standard part of the global conversation aimed at addressing this gap.

What fruits has IBM's involvement borne so far? When IBM worked to help establish computer science, it took over 30 years from the first computer science department at Columbia until computer science was a standard fixture in most top universities in the world. Universities are making good progress starting SSME-related initiatives, so one indicator of progress is the more than 200 such programs that are now under way. Books, journal articles and conferences are appearing, and the body of knowledge related to service innovation is growing.

Have the objectives changed at all? Are different skills needed than when this program began? The objectives really have not changed since the inception of the program. Service leaders need a strong mix of business, technical and people skills. SSME programs must be multidisciplinary, cutting across the often siloed schools of engineering, computer science, business and the social sciences.

However, some universities have added a new design component, resulting in a new acronym, SSMED. This reflects more emphasis on service design and creating whole new types of service, not just improving the quality and productivity of existing service businesses.

What does the future hold? In the next five years, we expect to see a new tool or [computer-aided design] approach that further integrates engineering, management and social science approaches to both improving service and creating whole new types of service. We further expect that students with SSMED experience will be well prepared to use these tools for the purpose of improved service innovation.

– JAMIE ECKLE

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SharkTank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Oops!

It's mid-February, and the server that contains all the year-end processing data and reports goes down. When it can't be revived, techs decide to reformat the drives and restore from backup. "One tech hurried off to start the reformatting while another looked through the backup log for the appropriate tape," says a pilot fish on the scene. Bad news: The last good backup is dated Dec. 31. And the reformatting has begun, so there's no going back – six weeks of data are gone. But how did it happen? "The backups were being done centrally to one server," fish says. "This meant all servers in the data center, plus some outside systems, were backed up together. As the outside systems might not be running when the backup ran, the operators were told – and it was documented in the procedure manual – to ignore the 'backup failed' message, as it supposedly was for the systems not turned on. Our VP tendered his resignation because of this, but the board declined it. The VP did tell us that if it happened again, he wouldn't be the only one leaving."

Just Under the Wire

Director of customer support at this big hospital calls the software team in for an important meeting. "He emphatically announces that we will no longer support any handheld devices except BlackBerries and Windows devices. We will grandfather devices already in use but will not support new additions," reports a pilot fish there. "We return to our office to find 10 new 'unauthorized' devices – with a note from the same director to configure and deploy them."

Aha!

BlackBerry user is setting up his new device when he calls support pilot fish with a problem. "The configuration routine includes the user entering his e-mail address and a password," says fish. "This user called to tell me that the instructions didn't work. I walked through the process with him and asked that he carefully check his e-mail address for any errors. 'Everything looks good,' he replied. Things still weren't working, so I got the service provider's tech support on the line with us. We checked all the possible problems and went through the same steps with him, with more injunctions to make sure his e-mail address was correctly spelled. After an hour of working with the tech-support people, things still weren't working. I asked the user one more time, 'Are you sure you've spelled your e-mail address correctly?' to which he replied, 'Well, let me put my glasses on,' followed by a long pause. Then: 'Oops, I have two dots before the *com* part of my address.' He's fortunate he's a remote user."

■ *Feed the Shark! Send me your true tale of IT life at sharky@computerworld.com. You'll snag a snazzy Shark shirt if I use it.*

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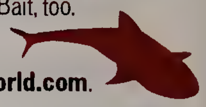

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Frank Hayes

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WHAT HAPPENS if a U.S. customs agent wants to know what's on a laptop belonging to one of your globe-trotting users? Right now, he can demand to see it. Or copy it. Or confiscate the laptop — or phone, iPod, USB flash drive, handheld or any other electronic device that a traveler brings into the U.S.

This month, Rep. Loretta Sanchez (D-Calif.) proposed a law to limit that. Her bill won't go anywhere. But it's a nice try.

The reason why H.R. 6869, the Border Search Accountability Act of 2008, will die in the House Committee on Homeland Security is that the congressional session is almost over. There just isn't time for it to wend its way through the normal lawmaking process. And because it's not emergency legislation with dozens of powerful co-sponsors, it won't get any special treatment.

But for a road warrior whose laptop is seized, the situation is certainly an emergency. Leave aside the privacy issues for the moment. In practical terms, everything on a confiscated laptop is gone — meeting notes, contract negotiations, customer and price databases, one-of-a-kind files. By the time a laptop is returned, any deal that depends on that electronic information may be toast.

If we want that data protected, we're not going to get help from a law anytime soon. It's up to us.

Of course, an overzealous customs agent isn't the only problem for road warriors and their electronic devices. Laptops are lost and stolen at airports all the time. Smart phones are left in taxis. Briefcases full of gadgets disappear in hotels and restaurants.

Chances are, the data on those devices isn't at risk. They'll wind up in a lost and found, or in the hands of a thief who's just interested in selling the hardware, not sifting through what's inside.

Backing up what's on a traveling user's laptop isn't rocket science.

Encryption can keep that data safe — but if it isn't backed up, it's effectively lost for business use.

That's a problem. Why haven't we solved it?

We have the technology. We have VPNs for connecting with the corporate office, and the software to synchronize files. Backing up what's on a traveling user's laptop isn't rocket science.

It just isn't easy enough — or important enough — in the eyes of users. And it doesn't solve the problem of backing up smart phones, iPods and all the rest.

That means we have some explaining to do — and some hard work.

We have to explain to users what can happen: customs confiscations, thefts, losses. And remind them that whatever isn't backed up is gone forever, and that could cost them time, or a deal, or a customer's trust.

We also have to explain these things to their managers, who have an interest in getting business done. And to the company's lawyers, who have their own reasons for wanting company information backed up and protected.

And then we have to stitch together a one-click backup application that will be so easy to run, no user will find an excuse not to. One click, and everything in the "save" folder is backed up and encrypted before the trip to the airport, along with flash drive, iPod and other data. Another click, and the user can work on the plane. Click once more, and if the flight offers broadband service, it can be backed up again before that trip through customs.

It's a problem IT can solve — not just with technology, but with education and motivation for the users who will have to make sure those backups happen. And no one else is going to solve this problem for us.

Isn't it about time we tried? ■

Frank Hayes *is* Computerworld*'s senior news columnist. Contact him at frank_hayes@computerworld.com.*

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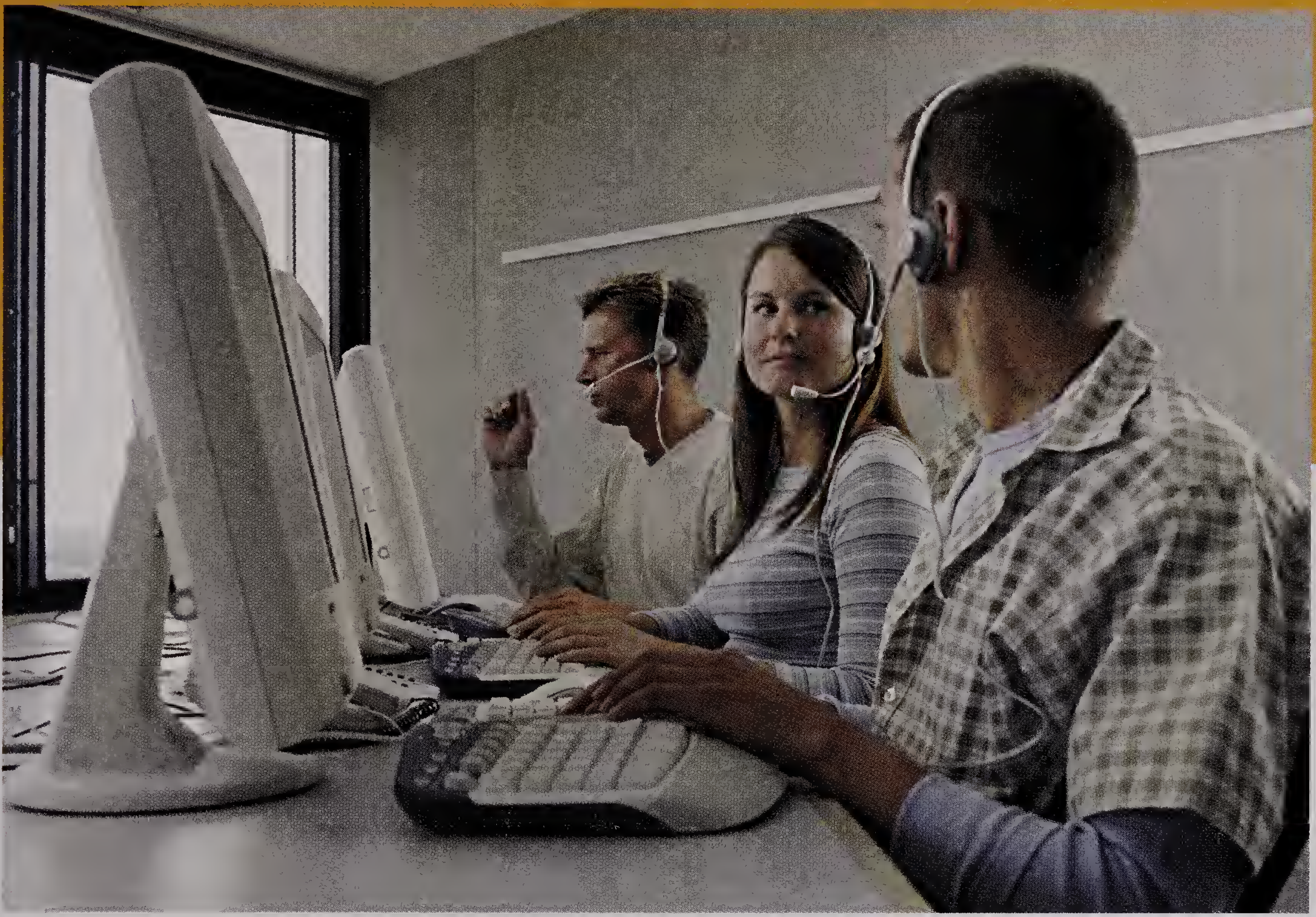

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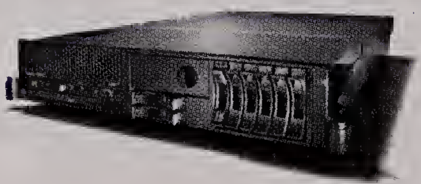

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